NSW DEPARTMENT OF COMMERCE

STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
AREAS 'B' AND 'D', LONG BAY CORRECTIONAL COMPLEX
REDEVELOPMENT
ANZAC PARADE, MALABAR, NSW

E12723/4-AW

5 August 2005

E12723/4-AW
5 August 2005

NSW Department of Commerce
Level 13 McKell Building
2-24 Rawson Place
SYDNEY NSW 2000

Attention: Mr Peter Shun

Dear Sir,

RE: STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
AREAS 'B' AND 'D', LONG BAY CORRECTIONAL COMPLEX REDEVELOPMENT

Coffey Geosciences Pty Ltd (Coffey) is pleased to provide the second phase of the Stage 2 Environmental Site Assessment report for the above site.

We draw your attention to the enclosed sheet entitled "Important Information About Your Coffey Environmental Site Assessment" which should be read in conjunction with the report.

We trust that our report meets with your requirements. If you require any further information regarding our report, please do not hesitate to contact the undersigned.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD

JOSHUA LASKY
Senior Environmental Engineer

STRIDER DUERINCKX
Environmental Geologist

Distribution:

Original	Coffey Geosciences Pty Ltd File E12723/4
1 copy	Coffey Geosciences Pty Ltd Library
8 copies	NSW Department of Commerce (8 bound, 1 electronic version)
1 copy	Graeme Nyland – Site Auditor

Coffey Geosciences Pty Ltd ACN 056 335 516

8/12 Mars Road Lane Cove West
NSW 2066 Australia
PO Box 125 North Ryde
NSW 1670 Australia
Telephone +61 2 **9911 1000**
Facsimile +61 2 9911 1001
Email sydney@coffey.com.au

EXECUTIVE SUMMARY

This report presents the findings of the Stage 2 Environmental Site Assessment (ESA) undertaken by Coffey Geosciences Pty Ltd (Coffey) at Areas B and D of the Long Bay Correctional Complex.

The site is located at Long Bay Correctional Complex, Malabar. For the purposes of the proposed development, the site has been divided into five discrete development areas identified as Areas A to E within the Long Bay Correctional Complex. Area B is located towards the south-eastern corner of the site. Area D is located near the south-western boundary of the site and includes the maximum security hospital and front of Long Bay Correctional Complex which faces Anzac Parade.

The objectives of the Stage 2 ESA were to assess the nature, extent and degree of soil and groundwater contamination associated with the potential areas of environmental concern in Areas B and D identified in the Stage 1 Preliminary 1 ESA (PESA) undertaken by Coffey in 2003, assess potential risks posed by contaminants to health and the environment, assess whether contamination in the subject areas poses a significant risk of harm, assess contamination issues requiring further remediation, management or investigation and potential options to address these issues. The scope of work included preparation of an environmental sampling and analysis plan (SAP) for review and approval by an EPA Accredited Auditor, two phases of field investigations and laboratory testing, and data assessment and reporting.

The information obtained from the PESA undertaken by Coffey indicated that prior to 1895, the site was Crown Land. After this time, the land has been used for public recreation and subsequently as the Long Bay Gaol/Correctional Complex.

Based on the investigations undertaken to date, it is considered that for Areas B and D to be suitable with respect to contamination for the proposed developments, remediation, management or further assessment is required to address the issues listed in the following tables.

These tables also list potential options to address these issues. It is notes that the options presented are not exhaustive and other options may be available. For some contamination issues, for instance the underground storage tanks (USTs) at Area B, there is a clear preferred remedial strategy and therefore only one option has been presented. We would be pleased to discuss these options further if requested.

Once the remedial / management strategies have been selected, it is recommended that a remedial action plan (RAP) be prepared detailing remediation and validation procedures for Areas A and B.

We further recommend that an asbestos management plan be prepared for the construction works to manage the potential for asbestos containing material to be encountered.

Any soil requiring offsite disposal would need to be classified in accordance with the NSW EPA (1999) *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes.*

Based on the available information, it has been assessed that contamination at the site would not pose a significant risk of harm to human health or the environment as defined in the NSW 1997 Contaminated Land Management Act. It is noted that the EPA is the sole arbiter of significant risk and their opinion may differ from that of Coffey.

ISSUES REQUIRING REMEDIATION / MANAGEMENT OR FURTHER ASSESSMENT, AREA B

Issue Requiring Remediation / Management or Further Assessment	Potential Options
1. Underground Storage Tanks, associated pipe-work and associated contaminated soil and groundwater	• Removal of the USTs and associated pipe-work, excavation and offsite disposal or onsite bioremediation of associated contaminated soils / sandstone followed by validation of the groundwater and assessment of the need for further groundwater remediation or monitoring. • Further assessment of the groundwater could also potentially be brought forward to be undertaken prior to removal of the USTs.
2. Petroleum contamination in the maintenance areas including at location CBH29 and potentially beneath the maintenance buildings and surrounds	• Validation of soil beneath the maintenance workshop area buildings and surrounding areas following removal of the slabs and then remediation of any hydrocarbon contamination identified most likely by excavation and offsite disposal or onsite bioremediation. Location CBH29 will also require opening up and any hydrocarbon contamination chased out.
3. The presence of fibre cement sheeting fragments containing asbestos and other waste in the waste storage compound	• Clearing of all rubbish material and asbestos containing materials and disposal to a licensed landfill. Depending on validation results removal of some surface soil in this area may also be required.
4. Potential for contamination in soils beneath existing buildings and concrete and bitumen surfacing	• Inspection / validation following removal of buildings and concrete or bitumen pavement to check that conditions of underlying soils are as expected. Remediation of any contaminated hotspots identified.
5. Potential for asbestos containing materials to be present in fill (noting that to date only one fragment of fibre cement sheeting was identified in the fill and it was not tested for asbestos)	• Undertake further validation of the fill material prior to or during the development and then assess remedial requirements (if any). • Excavation and offsite disposal of fill material. • Capping and containing the fill material on site using the building slabs in building footprints and either pavement or a soil layer (minimum 0.5m thick) in other areas. Note that a long term management and maintenance plan would need to be implemented to ensure the integrity of the cap and that any works undertaken beneath the cap are undertaken using appropriate health and safety and environmental controls. Capping of the site would be subject to Council approval. • Implementing a long term asbestos management plan without capping the area which may include controls on sub-surface work and periodic inspections by a suitably qualified consultant to check that no asbestos containing materials have come to the surface. Again this would be subject to Council approval. Initially the surface of the site would need to be validated for asbestos. • A combination of the above options could also be adopted. For example, fill could be stripped from certain parts of Area B rendering those areas clean and not requiring ongoing management while other parts of Area B could be capped. The stripped fill could either be disposed of offsite, validated as clean or capped in another part of Area B.

ISSUES REQUIRING REMEDIATION / MANAGEMENT OR FURTHER ASSESSMENT, AREA D

Issue Requiring Remediation / Management or Further Assessment	Potential Options
1. PAH and potentially asbestos contamination within the sound bunds	• Excavate material and dispose offsite to an appropriately licensed landfill. • Undertake further assessment of the extent of contamination within the sound bunds and then decide remedial strategy. • Manage along with the reminder of the fill material in Area D as per row 2 of this table.
2. Potential contamination within the fill material, given the age, the uncontrolled nature of the dumping and the amount of anthropogenic material (although it is noted that testing of the fill did not generally indicate significant contamination)	• Excavate fill material and dispose offsite to an appropriately licensed landfill. • Capping and containing the fill material on site,. Note that a long term management and maintenance plan would need to be implemented to ensure the integrity of the cap and that any works undertaken beneath the cap are undertaken using appropriate health and safety and environmental controls. Capping of the site would be subject to Council approval. At this stage, it is considered that the building slabs in the building footprints would serve as an adequate cap while the cap in other areas could be either formed by pavement or a layer of soil (say 0.5m thick). • A combination of the above options could also be adopted. For example, fill could be stripped from certain parts of Area D rendering those areas clean and not requiring ongoing management while the remainder of Area D could be capped. The stripped fill could either be disposed of offsite or capped in another part of Area D.
3. Potential for natural soils below groundwater table to be acid sulphate soils	• Once the details of the proposed development, including proposed modification to the groundwater level and soils below the groundwater level that will be disturbed, are known, further specific ASS testing could be undertaken targeting the materials that may be disturbed can be undertaken. If it is assessed that ASS may be disturbed by the development than an acid sulphate soil management plan could be prepared. • Alternatively it could be assumed that the natural soils are potential acid sulphate and a management plan can be prepared accordingly

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1 Objectives and Scope of Work 1

2. SITE DESCRIPTION 1
2.1 Area B 1
2.2 Area D 2
2.3 Current Surrounding Landuse 3
2.4 Proposed Landuse 3
2.5 Local Geology and Hydrogeology and Local Groundwater Usage 3
2.6 Acid Sulphate Soil Risk Map 4

3. SITE HISTORY 4
3.1 General 4
3.2 Area B 4
3.3 Area D 5
3.4 Previous Investigations 5
3.4.1 Previous Geotechnical Investigations 5
3.4.2 Stage 1 PESA 6
3.4.3 Phase 1 of Stage 2 ESA 6

4. POTENTIAL AREAS OF ENVIRONMENTAL CONCERN (AEC) 8

5. REGULATORY BACKGROUND AND APPLICABLE GUIDELINES 10
5.1 Soil 10
5.2 Groundwater 11

6. FIELD AND LABORATORY INVESTIGATIONS 13
6.1 Sampling and Analysis Plan 13
6.2 Field Investigations 13
6.2.1 Phase 1 13
6.2.2 Phase 2 15
6.3 Field Quality Assurance/Quality Control 17
6.4 Laboratory Analysis 20
6.4.1 Phase 1 21

6.4.2 Phase 2 21

7. RESULTS & SITE CHARACTERISATION 21

7.1 Subsurface Conditions 21

7.1.1 Soil 21
7.1.1.1 Area B 21
7.1.1.2 Area D 22
7.1.2 Groundwater 23
7.1.2.1 Area B 23
7.1.2.2 Area D 24

7.2 PID Results 26

7.2.1 Phase 1 26
7.2.2 Phase 2 27

7.3 Methane Results 28

7.3.1 Phase 1 28
7.3.2 Phase 2 28

7.4 Laboratory Results 29

7.5 Quality Assurance / Quality Control (QA/QC) Results And Data Usability 30

7.6 Comparison of Results with Investigation levels 32

7.6.1 Soil 32
7.6.1.1 Area B 33
7.6.1.2 Area D 33
7.6.2 Groundwater 34
7.6.2.1 Area B 34
7.6.2.2 Area D 35

8. DISCUSSION OF RESULTS 37

8.1 Area B 37

8.1.1 UST and Maintenance Workshop 37
8.1.2 Waste Storage 37
8.1.3 Filling and Leaching of Building Materials 38
8.1.4 Nursery 39
8.1.5 Groundwater 39

8.2 Area D 40

8.2.1 Subsurface Filling and Dams 40
8.2.2 Surface Fill Berms 41
8.2.3 Leaching from Buildings 42
8.2.4 Construction Compound 42
8.2.5 Groundwater 42
8.2.6 Acid Sulfate Soils 44

9. SIGNIFICANT RISK OF HARM 44

9.1 Area B 44
9.2 Area D 47

10. CONCLUSIONS AND RECOMMENDATIONS 49

11. LIMITATIONS 52

12. REFERENCES 52

Important Information About Your Coffey Environmental Site Assessment

TABLES

Table 1: Summary of Potential Areas and Chemicals of Concern
Table 2: Summary of Field QA/QC Samples
Table 3: Summary of Coffey Analytical Batches
Table 4: Summary of Measured water levels in Wells in Area B
Table 5: summary of Measured Field Water Quality Parameters in Area B
Table 6: Summary of Measured water levels in Wells in Area D
Table 7: Summary of Measured Field Water Quality Parameters in Area D
Table 8: Summary of Area D Methane Results – November 2004
Table 9: Summary of Area D Methane Results – March 2005
Table 10: Summary of Data Useability Assessment
Table 11: Assessment of SROH from Soil and Shallow Groundwater in Area B
Table 12: Assessment of SROH from Soil and Shallow Groundwater in Area D
Table 13: Issues Requiring Remediation / Management or Further Assessment, Area B
Table 14: Issues Requiring Remediation / Management or Further Assessment, Area D

FIGURES:

Figure 1: Site Location Plan
Figure 2: Site Layout Plan
Figure 3: Area “B” Investigation Locations
Figure 4: Area “D” Investigation Locations
Figure 5: Area “B” Groundwater Contours
Figure 6: Area “D” Groundwater Contours
Figure 7: Area “B” Soil Exceedances
Figure 8: Area “D” Soil Exceedances
Figure 9: Area “B” Groundwater Exceedances
Figure 10: Area “D” Groundwater Exceedances

LABORATORY RESULTS TABLES:

Table LR1: Summary of Phase 1 Laboratory Results for Soil – Area B
Table LR2: Summary of Phase 1 Laboratory Results for Soil – Area D
Table LR3: Summary of Phase 2 Laboratory Results for Soil – Area B
Table LR4: Summary of Phase 2 Laboratory Results for Soil – Area D
Table LR5: Summary of Phase 1 Laboratory Results for Groundwater – Area D
Table LR6: Summary of Phase 2 Laboratory Results for Groundwater – Area B
Table LR7: Summary of Phase 2 Laboratory Results for Groundwater – Area D
Table LR8: Summary of Phase 2 Laboratory Results for Groundwater – Area D July 2005

APPENDICES:

Appendix A: Masterplan
Appendix B1: Borehole, Test Pit and Hand Auger Logs- Phase 1 Investigations November 2004
Appendix B2: Borehole, Test Pit and Hand Auger Logs- Phase 2 Investigations March 2005
Appendix C1: Groundwater Monitoring Record Sheets- Phase 1 Investigations November 2004
Appendix C2: Groundwater Monitoring Record Sheets- Phase 2 Investigations March 2005
Appendix D1: PID Results- Phase 1 Investigations November 2004
Appendix D2: PID Results- Phase 2 Investigations March 2005
Appendix E1: Laboratory Analytical Reports and Chain of Custody Forms- Phase 1 Investigations November 2004
Appendix E2: Laboratory Analytical Reports and Chain of Custody Forms- Phase 2 Investigations March 2005
Appendix F1: QA/QC Data Validation Reports- Phase 1 Investigations November 2004
Appendix F2: QA/QC Data Validation Reports- Phase 2 Investigations March 2005

1. INTRODUCTION

This report presents the findings of the Stage 2 Environmental Site Assessment (ESA) undertaken by Coffey Geosciences Pty Ltd (Coffey) at Areas B and D of the Long Bay Correctional Complex (see Figures 1 and 2).

The site is located at Long Bay Correctional Complex, Malabar. For the purposes of the proposed development, the site has been divided into five discrete development areas identified as Areas A to E within the Long Bay Correctional Complex (Figure 2). The current investigation in Areas B and D was undertaken in conjunction with investigations of Areas A and C (combined) which will be reported separately.

Area B is located towards the south-eastern corner of the site. Area D is located near the south-western boundary of the site and includes the maximum security hospital and front of Long Bay Correctional Complex which faces Anzac Parade.

1.1 Objectives and Scope of Work

The objectives of the Stage 2 ESA were to:

- Assess the nature, extent and degree of soil and groundwater contamination associated with the potential areas of environmental concern in Areas B and D identified in the Stage 1 Preliminary 1 ESA (PESA) undertaken by Coffey in 2003 (ref: E12723/1-AF, dated 10 April 2003);
- To assess potential risks posed by contaminants to health and the environment;
- Assess whether contamination in the subject areas poses a significant risk of harm; and
- If remediation is considered necessary, to identify potential remedial options.

The scope of work for the environmental investigation included:

- Preparation of an environmental sampling and analysis plan (SAP) for review and approval by an EPA Accredited Auditor;
- Preparation of a site safety plan;
- Two phases of field investigations;
- Laboratory testing; and
- Data assessment and reporting.

2. SITE DESCRIPTION

2.1 Area B

Area B is rectangular in shape with an area of approximately 2.6Ha. The main features of Area B at the time of the site visits are shown on Figure 3 and included:

- A workshop for maintenance of vehicles and plant is located in the centre of Area B. Only very minor maintenance activities are currently being undertaken on site. The workshop contained an oil above ground storage tank (AST), a 44 gallon waste oil drum, and a moderately stained concrete floor;

- Three fuel bowsers (two petrol and one diesel) are present on the roadway in front of the maintenance workshop. Ten fill/dip points were observed in the area around the bowsers while an additional four fill/dip points were observed around 30m to the north-east of the bowsers. Assuming that each underground storage tank (UST) has one fill and one dip point, this would suggest that around seven USTs are located in this area;
- A former plant nursery with two relic greenhouses, a shed, a roofed covered area, and numerous pine log retained beds is present in the south-eastern corner of Area B;
- A fenced area for the temporary storage of waste is located between the stores building and nursery. At the time of the site visits the area contained a number of small stockpiles separated by product, including a stockpile of ash, a pallet of empty oil drums, scrap metal stockpile, scrap wood stockpile, green waste, rubbish bins, and domestic refuse. The area is unpaved and ash and a small number of fragments of fibro cement sheeting were observed on the surface. No oil staining was observed in the area;
- A number of concrete lined storage bays are located towards the south-eastern corner of Area B, adjacent to the former maintenance office building. The bays are used for storage of dry materials such as aggregate, sand, woodchip, bricks etc;
- A number of other workshop/storage buildings are located within Area B;
- The bulk of Area B is concrete or bitumen surfaced. West of the nursery a small gravel access road runs parallel to the western boundary of Area B.

2.2 Area D

Area D is irregular in shape with an area of approximately 7.9ha. The main features of Area D at the time of the site visit are shown on Figure 6 and included:

- The south-eastern part of Area D contains a field covered by patchy but healthy grass. This area is relatively flat and appears to be used as a sporting field. The southern edge of the sporting field contains a raised fill berm up to 2m in height that contains some immature casuarina trees.;
- The Long Bay Correctional Centre Hospital is located to the north-west of the soccer field. The hospital comprises a number of hospital buildings, a paved recreation area and some landscaped areas all located within a brick walled compound in the centre of the area;
- The northern edge of Area D contains the carparking area located just outside the main gates of the correctional centre. This area includes a mixture of bitumen paved areas, concrete kerbs and grassed berms;
- A vegetated fill berm of up to 3m in height is located to the immediate west of the hospital. The surface of the fill was observed to comprise soil and building rubble such as concrete. A small fish pond is located to the west of the stockpile in the south-western corner. Some sandstone bedrock was observed to outcrop near the fish pond;
- Some ash and fibro fragments were observed spread across the grassed areas within Area D;
- A construction compound was observed in November 2004 in the northern half of Area D near the hospital complex. Some oil drums were noted in the compound. By the time of the March 2005 inspection and fieldwork, this compound had been removed. No significant oil staining was observed;

- With the exception of the ash and fibro fragments, visible signs of contamination such as discolouration or staining of soil or bare soil patches were not observed in Area D.

2.3 Current Surrounding Landuse

The surrounding landuse of the Long Bay Correctional Complex is predominantly residential.

Gaol facilities and compounds to the north and west, and residential allotments to the south and east dominate the landuse of areas surrounding Area B.

Gaol facilities and open space areas to the north and east, and residential allotments to the south and west dominate the landuse of areas surrounding Area D.

2.4 Proposed Landuse

The masterplan for the Long Bay Correctional Complex indicates that:

- Area B will entirely be redeveloped for the proposed Long Bay Prison Hospital Site (commercial/industrial purpose); and
- The central portion of Area D will be redeveloped for the proposed Forensic Hospital Site. This proposed hospital will be an expanded footprint of the existing hospital area and will encroach the northern third of the existing sporting field. The remaining two-thirds of the sporting field will be remade and surfaced (open space landuse) for use as a detention basin and sporting field. The car parking area in the very northern part of Area D will remain essentially in its current form (commercial/industrial landuse with significant landscaped portions).

2.5 Local Geology and Hydrogeology and Local Groundwater Usage

The 1:100,000 Sydney Geology Sheet indicates that the site is located in an area generally underlain by Quaternary Holocene sediments comprising medium to fine grained sand with podsols. The Holocene sediments are underlain by Hawkesbury Sandstone. The 1:100,000 Sydney Geology Sheet also indicated a number of outcrops of Hawkesbury Sandstone comprising medium to coarse grained quartz sandstone with very minor shale and laminite lenses in the vicinity of the site.

According to McNally et al (1998), the Holocene sediments unit is heterogeneous, made up of loose sands and soft muds and includes the following:

- Aeolian dune sand, drift sand between dunes and beach sand (along present day or earlier Holocene strandlines)
- An estuarine facies comprising peat, organic clay and soft mud; and
- A weakly cemented groundwater duricrust horizon known as Waterloo Rock or Coffee Rock.

The Holocene sediments are commonly overlain by fill material.

Based on previous geotechnical reports undertaken on the site and provided to Coffey by DPWS, groundwater is expected to be shallow (between 1m and 3m below the ground level), particularly in low lying parts of the site. Previous reports indicate that groundwater levels in Area D were observed between 0.5m to 4m below the ground surface. No groundwater information was available in the remaining areas from previous geotechnical reports. The groundwater flow direction could be regionally influenced by Botany Bay located about 2km to the south-west of the site and the Tasman Sea, located about 1km to the east of the site.

A search of the Department of Land and Water Conservation records revealed that there are six registered groundwater bores within a 1km radius of the site. Five of the bores were located north-west of the site (anticipated to be downgradient of site) and registered for domestic and general use purposes. One bore used for irrigation purposes, was identified on the south-western side of the site (up or cross gradient of site).

2.6 Acid Sulphate Soil Risk Map

The Bondi/Botany Bay 1:25000 Acid Sulphate Soil Risk Maps prepared by the Department of Land and Water Conservation (June 1995) shows that the site is located within an area of no known occurrence of acid sulphate soil (ASS) materials.

A review of borehole logs at Areas B and D previously drilled by other geotechnical consultants indicates that test pits intersected alluvial sand and coffee rock from approximately 1m-2.5m depth in Area D. No reference to alluvial material or peat was made in the logs for Area B.

Given the above, it is considered that there is a low risk of ASS being present at Area B, and a moderate risk within alluvial sediments in Area D.

3. SITE HISTORY

3.1 General

The information obtained from the Phase 1 ESA (PESA) undertaken by Coffey in 2003 (ref: E12723/1-AF, dated 10 April 2003) can be summarised as follows:

- Prior to 1895, the site was Crown Land. After this time, the land has been used for public recreation and subsequently as the Long Bay Gaol/Correctional Complex;
- The site has been progressively developed over the last century.
- A small number of fragments of fibro cement sheeting were observed scattered across unpaved parts of the site, including the within the waste disposal compound in Area B;
- Surrounding landuse is predominantly residential and as such it is considered that there is a low likelihood of migration of contamination from adjacent sites onto the site;
- No notices have been issued on the site under the Unhealthy Building Land Act (1990), Environmentally Hazardous Chemicals Act (1985) or the Contaminated Land Management Act (1997);
- The extent, source and contamination status of imported fill material is unknown; and
- The exact number and capacity of USTs near the maintenance workshop in Area B is not known.

3.2 Area B

- At least three USTs containing super petrol and diesel are present in front of the maintenance workshop area (Area B), although based on the number of fill and dip points observed it was considered that more USTs may be present in this area;
- Spray painting and panel beating were formerly undertaken in the workshop within Area B, which was formerly used for maintenance of vehicles. Only minor quantities of chemicals were used within the workshop and any waste chemicals were likely disposed of offsite. The workshop is currently mainly only being used for refuelling activities.

- A diesel AST was formerly located on the site of the current workshop in Area B;

3.3 Area D

- The soccer field and part of the hospital area in Area D has been extensively filled. Filling was observed during geotechnical investigations on the site by Golder Associates in 1979 and 1981;
- Parts of Area D were formerly used for market gardening;
- A fill stockpile was recently placed adjacent to the western side of the hospital in Area D for aesthetic purposes;
- A number of small dams formerly located in the western portion of Area D have been filled;

3.4 Previous Investigations

Coffey have undertaken a PESA of Areas A to D in 2003, as well as the first phase of this detailed ESA in 2004. No additional environmental investigations are known to have been undertaken on the Areas A to D.

Thirteen geotechnical investigations have been undertaken on Areas A to D between October 1979 and February 2002. Copies of these reports were reviewed as part of the PESA.

3.4.1 Previous Geotechnical Investigations

The review of the previous geotechnical investigations indicated that:

- The geology comprises of topsoil and fill material, underlain by silty sands/sand and sandstone. Fills typically varied between 0.25m to approximately 1.5m below the surface. Groundwater was observed at depths between 1.5m to 3m below the surface in the lower areas.
- In Area B, fill material was observed to depths of 0.8m underlain by sands and sandstone material. No groundwater was observed in the investigations in this area.
- In Area D, fill material was observed across the area at depths varying between 0.3m to 2.6m. The fill material was underlain by silty sands/sand and clay layers and further underlain by sandstone bedrock at depths varying between 0.3m to 12m deep. Groundwater was observed during the investigations at depths between 0.5m and 4m below the surface.
- In 1979, Golder Associates conducted a supplementary Investigation for works associated with the hospital in Area D. During this investigation, fill and garbage was detected beneath the northern part of the hospital. Fill comprised of rubble including bricks with some small concrete blocks, timber and the odd piece of metal or scrap iron. Some organic matter was also encountered.
- Golder Associates observed fill being dumped in Area D in 1981. According to Golders, the fill comprised of *'about 70 to 90% sand (ranging from 'clean' yellow dune sand to dark grey/black organic contaminated sand) and from 10 to 30% building rubble (comprising a range of materials such as sandstone cobbles and boulders, concrete slabs to 1/1/2m wide, bricks, timber, metal wire, rags etc). They noticed during the period of field work that fill being dumped onto the site consisted of the following: empty 44 gallon drums, 1m diameter hollow concrete pipes laid horizontally, palm trees, parts of brick walls and other timber and metal wastes.'*

3.4.2 Stage 1 PESA

The potential areas of environmental concern identified in the Stage 1 PESA for Area B included:

- Potential leakage of the USTs and/or associated pipe work;
- Pesticide and herbicide usage in the nursery;
- Potential leakage or spillage of chemicals used in the various workshops;
- Potential leakage from a former diesel AST; and
- Potential leakage or spillage of chemicals temporarily stored within the waste disposal compound and spreading of ash within the compound.

The potential areas of environmental concern raised in the Stage 1 PESA for Area D included:

- Filling of sporting field and hospital with waste material;
- Fill stockpile adjacent to hospital building;
- Infilling of small dams with potentially contaminated fill material; and
- Potential leakage or spillage of hydrocarbons stored within the construction compound.

The potential areas of environmental concern raised in the Stage 1 PESA for both areas included:

- Importation of contaminated fill/rubbish to the site;
- Spreading of ash from the coal boiler across the site; and
- Leaching or weathering of contaminants potentially contained in building materials and possible spreading or burial of asbestos containing building materials.

The presence of a shallow groundwater table across parts of the site also raised the potential for groundwater contamination from the above sources.

The Stage 1 ESA recommended that a Stage 2 ESA including sampling and analysis be undertaken to assess the potential AECs for the presence of contamination.

3.4.3 Phase 1 of Stage 2 ESA

The first phase of the Stage 2 ESA for Areas B and D was undertaken in November 2004 (Ref: E12723/3-AS, 23 February 2005). As requested by the DoC, the first phase of the Stage 2 ESA was undertaken to give a broad indication of contamination issues in Areas B and D so that these additional more detailed investigations could be undertaken.

The results of the analysis of soil samples at Area B indicated that no contamination was detected exceeding the commercial/industrial criteria, although PAHs were detected at concentrations exceeding the open-space/recreational criteria in one sample. Field investigations at Area B in the vicinity of the UST area were not able to adequately assess contamination associated with the USTs due to the presence of shallow sandstone bedrock in the UST area. Groundwater was not investigated at the UST area due to the shallow sandstone bedrock.

The results of the analysis of soil samples at Area D indicated that contaminants were not detected above the commercial/industrial criteria. PAHs in four samples exceeded the open-space/recreational guidelines. Groundwater samples analysed from five monitoring wells installed across Area D suggests that widespread gross contamination does not appear to be present in groundwater across Area D. Minor exceedences of heavy metals were observed in the groundwater above the protection of marine aquatic ecosystems. Methane was not detected at the five well locations in Area D.

The results of the first phase of the investigation indicated that further field work involving drilling, test pitting, hand auger drilling, installation of groundwater monitoring wells, sampling and analysis would be required to assess the suitability of Areas B and D for their proposed landuse.

4. POTENTIAL AREAS OF ENVIRONMENTAL CONCERN (AEC)

The PESA identified potential areas of environmental concern (AECs) and associated chemicals of concern (CoC) for Areas B & D. These are summarised in Table 1.

TABLE 1: SUMMARY OF POTENTIAL AREAS AND CHEMICALS OF CONCERN

AEC	Description of Potentially Contaminating Activity	CoCs	Likelihood of Contamination (Based on Site History Study Only)**	Comments
Area B	B1. Potential leakage of the USTs and/or associated pipe work in Area B.	TPH, BTEX, Lead, PAH	High	At least three diesel / petrol USTs are known to be present in the vicinity of the maintenance workshop, although it is suspected that additional USTs are present in this area
	B2. Pesticide and herbicide usage in the nursery	OCP, OPP, Herbicides	Low	Historical pesticide and herbicide usage in the nursery is not known.
	B3. Potential leakage or spillage of chemicals used in the various workshops in Area B.	Heavy Metals, TPH, BTEX, PAH, VOCs, SVOCs	Medium	Panel beating and spray painting were previously undertaken in the workshop.
	B4. Potential leakage from a former diesel AST	TPH, BTEX, PAH	Low	Information provided by Wayne Hammond suggested that a diesel AST was formerly located on the site of the maintenance workshop.
	B5. Potential leakage or spillage of chemicals temporarily stored within the waste disposal compound and spreading of ash within the compound	Heavy Metals, TPH, BTEX, PAH, VOCs, SVOCs, Asbestos	Medium	
Area D	D1. Filling of sporting field and hospital with waste material	Heavy Metals, TPH, BTEX, PAH, OCP, Asbestos, Nutrients, Methane	High	The soccer field and hospital areas are known to have been used as a rubbish tip.
	D2. Fill stockpile adjacent to hospital building	Heavy Metals, TPH, BTEX, PAH, OCP, Asbestos	High	Building rubble including bricks and broken concrete were observed within the stockpiles.
	D3. Infilling of small dams with potentially contaminated fill material	Heavy Metals, TPH, BTEX, PAH, OCP, Asbestos	Medium	Aerial photographs suggest that two small dams previously located within Area D were filled

AEC	Description of Potentially Contaminating Activity	CoCs	Likelihood of Contamination (Based on Site History Study Only)**	Comments
	D4. Potential leakage or spillage of hydrocarbons stored within the construction compound	Heavy Metals, TPH, BTEX, PAH, VOCs, SVOCs,	Low to medium	
Whole Site (All areas)	Importation of contaminated fill/rubbish to the site	Heavy Metals, TPH, BTEX, PAH, OCP, Asbestos, Nutrients, Methane	High	It is considered likely that significant filling of Area D has occurred in the past. Fill material may also have been imported to other areas of the site. It is our experience that such fill material often contains contaminants such as metals, PAHs and asbestos.
	Spreading of ash from the coal boiler across the site	Metals, PAHs	High	The site history review revealed that boiler ash has historically been used liberally across the site on lawns and gardens as well as in service trenches. Boiler ash was observed on the surface of various parts of the site. Boiler ash often contains elevated levels of PAHs.
	Leaching or weathering of contaminants potentially contained in building materials (i.e. lead from lead based paint, zinc from galvanised corrugated iron and asbestos from fibro) and possible spreading or burial of asbestos containing building materials	Heavy Metals, Asbestos	Medium to High	Historically buildings on the site have contained lead based paint and asbestos containing fibro cement rooves. A small number of fragments of fibro cement sheeting were observed on the surface of unpaved parts of the site.

** This is a qualitative assessment of the probability of contamination being detected at the potential AEC based on the site history study.
Heavy metals include Arsenic, Cadmium, Chromium, Copper, Lead, Zinc, Mercury and Nickel
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
TPH - Total Petroleum Hydrocarbon
PAH - Polynuclear Aromatic Hydrocarbon
OCP- Organochlorine Pesticide
OPP – Organophosphorus Pesticide

The first phase of the detailed ESA identified a number of locations across Areas B and D that required further investigation, including:

- Investigations adjacent to CBH29 (Area B) to delineate potential TPH/BTEX/PAH contamination observed during drilling at this location;
- Investigations adjacent to CBH61 (Area B) to delineate elevated PAH/BaP in natural sands identified at this location; and

- Investigations adjacent to HA15 (Area D) to delineate elevated TPH/PAH in natural sands identified at this location.

5. REGULATORY BACKGROUND AND APPLICABLE GUIDELINES

5.1 Soil

The investigation criteria for soil were established based on the following references:

- NSW EPA (1998) Guidelines for the NSW Auditor Scheme;
- NSW EPA (1994) Guidelines for Assessing Service Station Sites; and
- NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM).

Other references were used to supplement the above references where appropriate.

The NSW EPA (1998) *Guidelines for the NSW Site Auditor Scheme* present health based investigation levels for different landuses (eg. industrial / commercial, residential, recreational etc.) as well as provisional phytotoxicity based investigation levels.

Area B is to be entirely used for a proposed hospital, therefore for on-going commercial/industrial use. Therefore the threshold concentrations for commercial or industrial land use have been adopted as the primary investigation criteria (Column 4 of the table in the NSW EPA (1998) *Guidelines for the NSW Site Auditor Scheme)*.

The landuse for Area D is to be split into two separate landuses based on the current master plan for the site (Appendix A). Those landuses would be commercial / industrial for the area to be occupied by the proposed hospital and existing carparking, and open space/recreational use for the proposed reduced sports field and perimeter landscaped berm.

For recreational/open space and park use, the lower of the human health based threshold levels listed in Column 3 and the provisional phototoxicity based guidelines listed in Column 5 of the table in NSW EPA (1998) may be adopted as investigation criteria for the respective contaminants of concern.

The NSW EPA (1998) *Guidelines for the NSW Site Auditor Scheme* does not provide threshold levels for total petroleum hydrocarbons (TPH). The NSW EPA (1994) *Guidelines for Assessing Service Station Sites* provides acceptable investigation levels for petroleum hydrocarbons compounds at service station sites to be reused for sensitive landuses such as residential. The EPA (now DEC) has advised that these should also be used for all sites to be used for less sensitive landuses, such as commercial / industrial.

There are currently no national or NSW guidelines for asbestos in soil[a]. The NSW EPA has advised that asbestos is a human health issue and not an environmental issue. On the advice of the NSW Department of Health, the NSW EPA (now DEC) has advised NSW Site Auditors (Site Auditors Meeting 1 March 2000) that "no asbestos in the soil at the surface is permitted".

[a] Enhealth (who were previously known as NEHF) are currently considering guidelines for asbestos in a non-occupational

The Acid Sulfate Soil Management Committee has prepared guidelines for the assessment and management of Acid Sulfate Soils (ASS). These guidelines are endorsed by the NSW EPA. The guidelines provide action criteria based on three broad texture categories of soil and the amount of material expected to be disturbed. The 1-1000 tonnes, coarse texture criteria have been adopted in this assessment.

5.2 Groundwater

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

A ridgeline trends approximately north-south through the Area B. Area D is to the west of the ridge whilst Area B straddles the ridge, with surface slopes down to the east, south and west. Groundwater flowing to the east of the ridgeline would be expected to flow into the Pacific Ocean located approximately 1km to the east. Groundwater flowing to the west of the ridgeline would be expected to discharge into the Botany Sands aquifer and eventually flow into Botany Bay located approximately 3km south west of the site, although there is some possibility it could be influenced by Long Bay.

It is considered that potential beneficial uses of the groundwater to the west of the site include:

- Groundwater extraction downgradient of the site for industrial use, although there is no evidence that this is occurring downgradient of the site;
- Groundwater extraction for drinking purposes – Given the reticulated water supply in the Sydney Area, the regular use of groundwater for drinking purposes is considered unlikely.
- Groundwater extraction for domestic uses including irrigation purposes noting that a number of bores registered for domestic and irrigation purpose are located approximately 500m to the north-west of the site.
- Groundwater discharge to water bodies sustaining aquatic ecosystems - with the nearest receiving body being Botany Bay located about 3km to the west of the site.

Due to the shallow sandstone on the eastern side of the site, it is considered unlikely that a beneficial aquifer would exist between the site and the ocean. It is therefore considered unlikely that groundwater would be used prior to discharging to the ocean. The Pacific Ocean supports marine aquatic ecosystems

Water quality for industrial use is specific for the use and often it is necessary for water to be treated to make it suitable for a specific use.

Threshold concentrations for drinking water are provided by NHMRC/ARMCANZ in their publication Australian Drinking Water Guidelines (1996). These guidelines provide threshold levels based on assumptions of 2L of drinking water everyday for a 70 year life.

The threshold concentrations presented in the ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* are considered applicable for the protection of aquatic ecosystems of the receiving waters. As these guidelines apply to receiving waters, it is normally conservative to apply these to groundwater discharging to receiving waters, particularly where groundwater being assessed is some

environment, including asbestos in soil.

considerable distance from the receiving waters as in this case.

ANZECC (2000) advocates a site specific approach to developing guideline trigger values based on such factors as local biological affects data, the current level of disturbance of the ecosystem etc. The guidelines present 'low risk guidelines trigger values' which are defined as concentrations of key performance parameters below which there is a low risk that adverse biological affects will occur. It is important to note that these are not threshold values at which an environmental problem will likely occur if exceeded. Rather, these values trigger two possible responses. The first response, to continue monitoring, occurs if the measured value is less than the trigger value, showing that there is a 'low risk' that a problem exists. The alternative response, either further site-specific investigations to assess whether or not there is an actual problem or a need for management/remedial action, occurs if the trigger value is exceeded suggesting that a 'potential risk' exists

Low risk trigger values are provided for the protection of 80-99% of species in marine and fresh waters (presented in Table 3.4.1 of the guidelines), with the trigger value depending on the 'health of the receiving waters.

It is understood that the EPA's policy is that the trigger values for the protection of 95% of aquatic ecosystems should be used except where contaminants are potentially bioaccumulative in which case the trigger values for protection of 99% of species should be used. Therefore, we have selected trigger values for protection of 95% of species for the majority of contaminants, and 99% of species for bioaccumulative contaminants for initial comparison purposes.

ANZECC (2000) states that there is currently insufficient data to derive high reliability trigger values for various contaminants. For these contaminants, low reliability trigger values have been adopted when necessary.

ANZECC (2000) state that there is currently insufficient data to derive a high reliability trigger value for TPH but propose a low reliability trigger value for TPH of 7μg/L. This guideline is generally considered by industry to be overly conservative and is also well below the TPH detection limit that most laboratories can achieve. Another commonly internationally used guideline for TPH is contained in Dutch (1994), which present a target, and intervention values for mineral oils. The average of the target and intervention values (325μg/L) is commonly used as an intervention level for TPH and will be adopted as investigation criteria for this site.

Guidelines for irrigation and general water use are also presented in the ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Section 4.2 of the guidelines).* Guidelines for the recreational water use are also presented in the ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Table 5.2.3 of the guidelines)*. These guidelines are generally less sensitive than the aquatic ecosystems and drinking water guidelines.

Groundwater beneath Area D is expected to flow to the north and northwest of the site towards Botany Bay, where it was assessed that beneficial use of the groundwater could occur. For protection of aquatic ecosystems in this area it is considered that the marine water trigger values are applicable. In addition, the use of groundwater for drinking / irrigation cannot be precluded. Therefore the drinking water guidelines have also been adopted for this part of the site (which are more conservative than the irrigation guidelines).

Area B occurs on the ridgeline where it was assessed that there would be little beneficial use of groundwater due to the presence of shallow bedrock. Groundwater from Area B would either flow south and eastwards towards the ocean, or west to Area D. It is considered that the marine water trigger values are applicable for investigating chemical concentrations in groundwater at this part of the site.

6. FIELD AND LABORATORY INVESTIGATIONS

6.1 Sampling and Analysis Plan

Coffey prepared a Sampling and Analysis Plan (SAP) prior to each phase of fieldworks (Phase 1 ref: E12723/3-AJ 27 September 2004, Phase 2 ref: E12723/4-AF 3 March 2005), which outlined the objectives of the investigation and the work plan for the soil and groundwater investigations. The auditor, Mr Graeme Nyland, reviewed the SAP's, and work was undertaken in general accordance with these plans.

6.2 Field Investigations

Fieldwork was undertaken in two phases as discussed in the following sub-sections.

6.2.1 Phase 1

Phase 1 fieldwork was undertaken during November 2004 by Coffey Environmental Engineers/Scientists.

The Phase 1 field investigations included:

- Drilling of 17 boreholes (identified as CBH8, CBH25 to CBH32, CBH58 to CBH64) in Area B with the aid of a truck mounted drilling rig (Figure 3);
- Drilling of eight hand auger holes (identified as HA14 to HA21) in Area D (Figure 4);
- Drilling of 17 boreholes (identified as CBH9, CBH10, CBH12, CBH13 to CBH24, CBH65) in Area D with the aid of a truck mounted drilling rig (Figure 4);
- Installation of groundwater wells into 5 of the boreholes (identified as CBH10/MW1, CBH11/MW2, CBH13/MW3, CBH14/MW4, CBH19/MW5) in Area D (Figure 4); and
- Groundwater and methane monitoring from the five groundwater monitoring wells.

The sampling locations were located to target AECs identified in the Stage 1 PESA (such as the USTs in Area B) and to provide a reasonable coverage of the site. The monitoring wells were located to assess groundwater contamination and hydrogeological conditions in Area D, particularly within the areas of deeper fill material. Four of the monitoring wells were located on the sporting field, with one monitoring well, CBH11/MW2, located in the north-eastern corner of Area D, where deep fill was encountered.

The boreholes in Area B were extended to depths ranging between 0.2m and 6m. The majority of the holes extended into natural Aeolian sands and / or to refusal on sandstone bedrock. Between one and three soil samples were collected from most of the boreholes, although no samples were collected from boreholes that refused on sandstone immediately below the surface.

The hand auger holes in Area D were extended to depths ranging between 0.2m and 0.5m. The majority of

the hand auger holes were located in an area where bedrock was shallow and refused on sandstone bedrock. Between one and two soil samples were collected from each hand auger hole.

The boreholes in Area D were extended to depths ranging between 2m and 8m. Between two and five soil samples were collected from each borehole directly off the auger or using a Standard Penetration Test (SPT) sampler.

The boreholes into which monitoring wells in Area D were installed were extended to depths ranging between 4.5m and 6m, which corresponded to approximately two metres below the observed groundwater table at those locations to allow installation of monitoring wells. The boreholes for the monitoring wells were drilled using hollow flight augers while the other boreholes were drilled using solid flight augers.

The borehole logs and construction details of monitoring wells are shown in Appendix B. All monitoring wells top of casing and ground levels were surveyed by a registered surveyor. The surface levels of the remaining boreholes were estimated based on the monitoring well heights and where available additional survey data.

Each sample collected was divided into two sub-samples. One of the sub-samples was placed into a laboratory-supplied, acid-rinsed 250mL glass jar and placed in an ice-chilled cooler box. The other was bagged for field headspace screening. A photoionisation detector (PID) was used to screen the headspace gases of the bagged soil samples. The PID had a 10.6eV lamp calibrated with isobutylene gas at 100ppm prior to commencement of each day of fieldwork.

Monitoring wells were constructed of machine slotted, Class 18 uPVC screen and screw on casing, and finished with a rubber sealed well cap and a steel gattic cover. Construction included placing the screen with approximately 1m above the expected water level and 2m of screen below. A 2mm sand filter pack was placed around the screen to approximately 0.5m above the top of the screen, and a bentonite layer of at least 0.5m thickness was placed ontop of the screen to prevent surface water infiltration. Each monitoring well was developed after installation by pumping with a centrifugal pump until no further turbidity improvements were observed (minimum removal of six well volumes).

Groundwater samples were collected from the monitoring wells on 24 November 2004, in accordance with the following protocols:

- Prior to purging, the groundwater levels were measured in each well;
- Purging of the wells prior to sampling using low flow techniques. Purging was undertaken using a peristaltic pump with dedicated tubing used for each well. The purging rate was around 500ml/min. Purging continued until pH and EC readings stabilised;
- Field measurement of pH, EC and temperature, following purging but prior to sampling;
- Use of the low flow pump for sample collection;
- Samples to be analysed for heavy metals were field filtered using a 0.45μm filter; and
- Samples were collected into appropriately preserved laboratory-supplied containers and placed in a cooler box filled with ice.

Methane monitoring in Area D was undertaken on the five groundwater monitoring wells. Prior to sampling, a

rubber sealed ex-cap was installed at the top of the well to inhibit the release of gas to the atmosphere. Methane readings were taken from the constructed monitoring wells using a calibrated Geotechnical Instruments GA45SA Landfill Gas Meter on 14 December 2004. The approximate volume of gas in the wells was calculated by estimating the groundwater level at that well location and subtracting that value from the total well depth. On each occasion the well was purged by one complete well volume prior to taking the final reading. Once the methane meter was attached to the well, an initial reading was taken, followed by a maximum reading recorded during purging and a final reading once the well had been purged by one well volume. Gasses recorded included methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2).

6.2.2 Phase 2

Phase 2 Fieldwork was undertaken during March 2005 by Coffey Environmental Engineers/Scientists. The Phase 2 field investigations included:

- Drilling of 24 boreholes, including 4 cored boreholes (identified as CBH 72-CBH94, and CBH122-CBH123) in Area B (Figure 3) with the aid of a truck and utility mounted drilling rig;
- Drilling of 7 hand auger holes (identified as HA22-26, HA28-29 in Area B (Figure 3);
- Installation of groundwater monitoring wells in three of the environmental boreholes (identified as CBH72/MW6, CBH73/MW8 and CBH74/MW9), and drilling of two separate boreholes specifically for monitoring well installation (identified as MW 7 and MW10) in Area B (Figure 3);
- Drilling of 44 boreholes, including 5 cored boreholes (identified as CBH95-CBH106, CBH110-CBH121, CBH128-CBH144) in Area D (Figure 4) with the aid of a truck and utility mounted drilling rig;
- Conversion of 3 boreholes to monitoring wells (identified as CBH97/MW11, CBH112/MW13 and CBH119/MW14), and drilling of one separate borehole specifically for monitoring well installation (MW12) in Area D (Figure 4);
- Excavation of 18 test pits (identified as CTP1-CTP19) in Area D (Figure 4); and
- Groundwater and methane monitoring from the nine newly installed and five existing monitoring wells.
- A second round of groundwater monitoring from the four newly installed and five existing monitoring wells across Area D.

The sampling locations were located to target AECs identified in the Stage 1 PESA (such as the USTs in Area B), assess potential contamination hotspots identified in the first phase of sampling and to provide a combined first and second phase of coverage of the site generally in accordance with NSW EPA Guidelines.

The monitoring wells in Area D were located to supplement the phase 1 monitoring well locations. The groundwater wells in Area B were located to assess potential groundwater contamination associated with the USTs.

The boreholes in Area B were extended to depths ranging between 0.05m and 6m. All of the holes extended into natural sands and / or to refusal on sandstone bedrock. At least three soil samples were collected from most of the boreholes, although no samples were collected from boreholes that refused on sandstone immediately below the surface. Samples were collected from each borehole directly off the auger (0.0m-

0.2m) or generally using a decontaminated Standard Penetration Test (SPT) sampler. In order to assess geotechnical founding conditions, selected boreholes were cored 3 metres into the bedrock across Areas B & D.

The hand auger holes in Area B were extended to depths ranging between 0.2m and 0.9m. The majority of the hand auger holes were located in an area where bedrock was shallow and refused on sandstone bedrock. Between one and two soil samples were collected from each hand auger hole.

The boreholes in Area D were extended to depths ranging between 1.2m and 15.1m. At least three soil samples were collected from each borehole directly off the auger (surface samples only) or using a Standard Penetration Test (SPT) sampler.

The borehole logs and construction details of monitoring wells are shown in Appendix B. All monitoring wells top of casing and ground levels were surveyed by a registered surveyor. The surface levels of the remaining boreholes and test pits were estimated based on the monitoring well heights and where available additional survey data.

All boreholes were generally drilled using solid flight augers. Monitoring well locations in Area B were drilled into sandstone bedrock using STRATAPAC, a wet rotary method. Due to the presence of fill containing cobbles and building refuse, the monitoring wells in Area D were drilled using solid flight augers rather than hollow flight augers. The fill and sand were observed to remain open for sufficient duration to install the well materials and filter packs. The borehole logs and construction details of monitoring wells are shown in Appendix B.

Each sample collected was divided into two sub-samples. One of the sub-samples was placed into a laboratory-supplied, acid-rinsed 250mL glass jar and placed in an ice-chilled cooler box. The other was bagged for field headspace screening. A photoionisation detector (PID) was used to screen the headspace gases of the bagged soil samples. The PID had a 10.6eV lamp calibrated with isobutylene gas at 100ppm prior to commencement of each day of fieldwork.

The boreholes into which monitoring wells in Area D were installed were extended to depths which corresponded to approximately two metres below the observed groundwater table at those locations to allow installation of monitoring wells. Monitoring wells in Area B were drilled to 6m depth, approximately 5m into bedrock. Monitoring wells were constructed of machine slotted, Class 18 uPVC screen and screw on casing, and finished with a rubber sealed well cap and a steel gatic cover. A 2mm sand filter pack was placed around the screen to approximately 0.5m above the top of the screen, and a bentonite layer of at least 0.5m thickness was placed on top of the screen to prevent surface water infiltration.

Each monitoring well was developed after installation by pumping with a centrifugal pump until no further turbidity improvements were observed (minimum removal of six well volumes). The levels of the top of casing of the wells were surveyed by a registered surveyor. Groundwater samples were collected from the monitoring wells on 22 and 23 March 2004, in accordance with the following protocols:

- Prior to purging, the groundwater levels were measured in each well;
- Purging of the wells prior to sampling using low flow techniques. Purging was undertaken using a peristaltic pump with dedicated tubing used for each well. The purging rate was around 500ml/min.

Purging continued for 3 well volumes or until pH and EC readings stabilised;

- Field measurement of pH, EC and temperature using a calibrated water quality meter following purging but prior to sampling. Eh and DO readings were also taken during the second sampling round;
- Use of the low flow pump for sample collection;
- Samples to be analysed for heavy metals were field filtered using a 0.45μm filter; and
- Samples were collected into appropriately preserved laboratory-supplied containers and placed in a cooler box filled with ice.

A second round of groundwater sampling was undertaken on 29 June 2005 from the nine wells in Area D using the same procedures.

Prior to sampling methane vapours, a rubber sealed ex-cap was installed at the top of the well to inhibit the release of gas to the atmosphere. Methane readings were taken from the constructed monitoring wells using a calibrated Geotechnical Instruments GA45SA Landfill Gas Meter on 22 March 2005. The approximate volume of gas in the wells was calculated by estimating the groundwater level at that well location and subtracting that value from the total well depth. Once the methane meter was attached to the well, an initial reading was taken, followed by readings for five minutes to establish the initial concentration was well as the final reading once the well had been purged by approximately one well volume. Gasses recorded included methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2).

6.3 Field Quality Assurance/Quality Control

Sampling activities for both phases of the environmental assessment were generally based on procedures and protocols outlined in Coffey's Environmental Field Manual (QP15/5-E, June 1995, revised September 1997), which is based on industry accepted standard practice.

Augers were cleaned between holes using a high pressure water cleaner. Sampling equipment that came directly in contact with the soil (e.g. SPT) were decontaminated between samples by scrubbing with a solution of Decon-90 (a phosphate-free detergent) followed by rinsing with potable water. A clean pair of disposable gloves was used when handling each sample.

Dedicated tubing was used for each monitoring well during collection of groundwater samples.

Wash blanks were collected to assess the efficacy of field decontamination procedures.

Inter and intralaboratory duplicate samples were collected to assess the reproducibility as well as the precision and accuracy of the results.

Trip blank and spike samples were taken into the field and analysed to assess potential loss or gain of volatiles as a result of sampling and analysis procedures.

The field QA/QC samples are summarised in Table 2.

TABLE 2: SUMMARY OF FIELD QA/QC SAMPLES

Area	Type of QA/QC Sample	Sample ID
Phase 1 Soil QA/QC Samples		
B	Intra-laboratory Duplicate	Dup 7 (duplicate of CBH28: 0.15-0.25)
B	Intra-laboratory Duplicate	Dup 8 (duplicate of CBH30: 1.0-1.3)
B	Inter-laboratory Duplicate	Dup 13 (duplicate of CBH62: 0.3-0.5)
B and D	Trip Blank	TB
B and D	Trip Blank	TB1
B and D	Trip Spike	TS
B and D	Trip Spike	TS1
B	Wash Blank	WB1
D	Intra-laboratory Duplicate	Dup 1 (duplicate of CBH10: 0-0.1)
D	Intra-laboratory Duplicate	Dup 2 (duplicate of CBH13: 0-0.1)
D	Intra-laboratory Duplicate	Dup 5 (duplicate of CBH22: 0-0.1)
D	Intra-laboratory Duplicate	Dup 6 (duplicate of CBH24: 0-0.1)
D	Inter-laboratory Duplicate	Dup 2 (duplicate of HA16: 0-0.1)
Phase 1 Groundwater QA/QC Samples		
D	Intra-laboratory Duplicate	Dup1 (duplicate of MW1)
Phase 2 Soil QA/QC Samples		
B	Intra-laboratory Duplicate	Dup B1 (duplicate of CBH89: 0.0-0.3)
B	Intra-laboratory Duplicate	Dup B9 (duplicate of CBH85: 0.15-0.25)
B	Intra-laboratory Duplicate	Dup B11 (duplicate of CBH92: 0.0-0.1)
B	Inter-laboratory Duplicate	Dup B2 (duplicate of CBH89: 0.0-0.3)
B	Inter-laboratory Duplicate	Dup B10 (duplicate of CBH85: 0.15-0.25)
B	Inter-laboratory Duplicate	Dup B12 (duplicate of CBH92: 0.0-0.1).
D	Intra-laboratory Duplicate	Dup D2 (duplicate of CBH116: 0.0-0.2)
D	Intra-laboratory Duplicate	Dup D4 (duplicate of CBH110: 0.0-0.2)
D	Intra-laboratory Duplicate	Dup 1D (duplicate of CBH133: 0.0-0.2)
D	Intra-laboratory Duplicate	Dup D5 (duplicate of CBH137: 0.0-0.2)
D	Intra-laboratory Duplicate	Dup D8 (duplicate of CBH102: 0.0-0.2)
D	Intra-laboratory Duplicate	Dup D13 (duplicate of CTP2: 3.0-3.2)

D	Intra-laboratory Duplicate	Dup D17 (duplicate of CTP13: 0.4-0.6)
D	Inter-laboratory Duplicate	ALS CBH116: 0.0-0.2 (duplicate of CBH116: 0.0-0.2)
D	Inter-laboratory Duplicate	ALS Dup D4 (duplicate of CBH110: 0.0-0.2)
D	Inter-laboratory Duplicate	ALS Dup D5 (duplicate of CBH137: 0.0-0.2),
D	Inter-laboratory Duplicate	ALS D8 (duplicate of CBH102: 0.0-0.2)
D	Inter-laboratory Duplicate	Dup D14 (duplicate of CTP2: 3.0-3.2)
D	Inter-laboratory Duplicate	Dup D18 (duplicate of CTP13: 0.4-0.6)
Phase 2 Groundwater QA/QC Samples		
B	Intra-laboratory Duplicate	Dup2 (duplicate of MW7) March sampling round
D	Intra-laboratory Duplicate	Dup1 (duplicate of MW5) March sampling round
D	Intra-laboratory Duplicate	DUP1 (duplicate of MW2) June sampling round
D	Inter-laboratory Duplicate	MW2DUP1 (duplicate of MW2) June sampling round
D	Trip Spike	TS1
D	Trip Blank	TB1

It was prearranged that samples would be collected by Amdel under CoC controls on a daily basis, and stored for processing. Coffey would then submit a separate analysis request for each area (Area B or Area D), with the aim of generating only one, two or three large batches per area. Amdel however undertook the analysis in 7 batches for Area B and 13 batches for Area D. For this reason, while overall, there was an adequate number of QA/QC samples analysed, some individual batches Table 3 (below) presents the summary of Coffey analytical requests and associated batches submitted for analysis. In total, four wash blanks were collected during the Phase 2 fieldworks, and five trip spikes and trip blanks were included with samples during transport and submitted for analysis.

TABLE 3: SUMMARY OF COFFEY ANALYTICAL BATCHES AND TRIP SPIKES & BLANKS AND WASH BLANKS FOR PHASE 2 SOIL INVESTGIATIONS

AREA	ANALYSIS REQUEST NO.	DATES OF SAMPLES COVERING	AMDEL BATCH NOS.	TRIP SPIKE ID	TRIP BLANK ID	WASH BLANK ID
B	1	10/03/2005	5e0951	TS	TB 11.3.05	WB
		11/03/2005	5e0959			
		14/03/2005	5e0982			
	2	15/03/2005	5e0999	TS B 17/3/05	TB B 17/3/05	WB B 17/3/05
		16/03/2005	5e1018			
		17/03/2005	5e1051			

B	23/03/2005	23/03/2005	5e1147			
D	1	10/03/2005	5e0952	TS	TB 11.3.05	WB 11.3.05
		11/03/2005	5e0960			
		14/03/2005	5e0984			
	1*	10/03/2005	5e0952A			
		14/03/2005	5e0984A			
	2	15/03/2005	5e0998	TS 050318.04	TRIP BLANK SEO831	WB 21/3
		17/03/2005	5e1052			
		18/03/2005	5e1071			
		21/03/2005	5e1100			
	2*	16/03/2005	5e1019			
	3	22/03/2005	5e1120	TS D 22/3/05	TB D 22/3/05	**
		22/03/2005	5e1121			
		23/03/2005	5e1191			

* *Resubmission of COC for same batch, but logged as separate Amdel batch*

** *Wash blank not required as test pitting only conducted.*

6.4 Laboratory Analysis

Amdel, who are NATA registered for the laboratory analysis undertaken, undertook primary laboratory analysis. Amdel subcontracted asbestos identification to ASET, who are NATA registered for asbestos identification.

ALS, also NATA registered for the laboratory analysis undertaken, was engaged as the check laboratory for inter-laboratory duplicate sample analyses.

The soil samples were dispatched under chain of custody conditions to Amdel, who forwarded inter-laboratory samples to ALS. Bulk analysis requests were completed by Coffey for soil samples, while remaining samples were held in the laboratory for further analysis, if required. The soil samples were selected for analysis based on a combination of sample location, field observations (i.e. material type, odours, etc), PID results and potential CoCs identified in the site history.

6.4.1 Phase 1

In Area B, a total of 21 soil samples were analysed, including 21 samples for heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylene (BTEX) and polychlorinated aromatic hydrocarbons (PAH) and 6 samples for volatile organic compounds (VOCs), organochlorine pesticides (OCP), organophosphorous pesticides (OPP) and asbestos.

In Area D, a total of 33 soil samples were analysed, including 33 samples for heavy metals, TPH, BTEX and PAH, 9 samples for VOCs, OCP and OPP and 7 samples for asbestos.

In Area D, five groundwater samples were analysed for heavy metals, TPH, BTEX, PAHs and VOCs.

6.4.2 Phase 2

In Area B, a total of 60 primary soil samples were analysed, including 60 samples for heavy metals, 52 samples for TPH, 28 samples for BTEX, 52 samples for PAH and 24 samples for VOCs, 7 samples for OCP and OPP, 10 samples for PCBs and 27 samples for asbestos. In addition, three fragments of fibre cement sheeting were collected and were also analysed for asbestos.

In Area B, four groundwater samples were analysed for heavy metals, TPH, BTEX, PAHs and heavy metals.

In Area D, a total of 126 soil samples were analysed, including 126 samples for heavy metals, 122 samples for TPH, 105 samples for BTEX, 122 samples for PAH, 17 samples for VOCs, 14 samples for OCP, 20 samples for PCBs, 59 samples for asbestos and 5 samples for SPOCAS. As the ASS investigation was preliminary in nature and details of proposed soil disturbances were unknown, SPOCAS analyses were undertaken on a range of materials.

In Area D, eight groundwater samples were analysed for heavy metals, TPH, BTEX, PAHs, heavy metals, total phosphorous, ammonia, nitrate, nitrite, NOx and Total Kjeldahl Nitrogen (TKN) during the March sampling round. During the June sampling round nine groundwater samples were analysed for the same suite of analytes.

7. RESULTS & SITE CHARACTERISATION

7.1 Subsurface Conditions

7.1.1 Soil

7.1.1.1 Area B

The boreholes and hand auger hole logs are included in Appenidx B. The logs revealed that Area B was underlain by:

- Pavement materials, including asphalt and concrete, to depths ranging between 0.15m and 0.2m below the ground surface. Pavement materials were not encountered in the boreholes in the nursery area (boreholes (CBH90, CBH92-CBH93, HA25-HA26 and HA28), or the lower southwestern portion of the area (CBH87-CBH90 and CBH91). The pavement materials were generally underlain by:

- Fill material, to depths ranging between 0.025m to 1.2m below ground surface. Fill material generally comprised clayey sand, sand, sandy gravel and gravelly sand, and generally comprised ash materials (locally sourced). Anthropogenic materials were observed at the surface in the vicinity of the waste storage area (CBH87-CBH89). Fill material was underlain by:
- Relic topsoil/colluvium, to depths ranging between 0.3-1.1m below the ground surface. Dark brown silty sand relic topsoils were generally encountered across Area B, though not in areas with shallow bedrock where fill directly overlay the bedrock;
- Aeolian sands, to depths ranging between 0.3m and 3.5m below the ground surface. The base of the aeolian sands was not encountered in 6 of the boreholes. Aeolian sands were not encountered in the upper northern part of the area with sandstone bedrock immediately below the pavement materials, fill or thin relic topsoils. Aeolian sands were underlain by:
- Sandstone bedrock. There was generally no weathered profile above the sandstone bedrock, though occasional thin residual clays were encountered such as in CBH90. The sandstone was cored in four locations for 3m and was revealed to be generally massive pale grey sandstone, fractured and jointed in the upper 2 metres, with occasional clay lenses. The base of the sandstone was not encountered in the field investigations.

Groundwater was not encountered in the upper northern portion of the area during drilling. Groundwater was observed at between 0.3m to 2m below the ground surface in the lower western and southern portions of the area. The boreholes drilled in the UST area did not encounter groundwater as the holes refused on sandstone bedrock. The presence of groundwater was not able to be observed whilst coring or installing the 4 monitoring wells due to the wet rotary techniques used.

It is important to note that sandstone bedrock in the vicinity of the UST area was observed at a shallow depth, in the order of 0.2m-1.2m below the ground surface. This suggests that the USTs have been installed into pits excavated into the sandstone bedrock in that part of Area B.

Odours indicative of hydrocarbon contamination were observed in borehole CBH29 from aeolian sand material collected below the fill layer. Following collection of the PID bag sample, it was observed that an oily film was present on the PID bag. This sample was screened by the PID and submitted to the laboratory for analysis. Hydrocarbon odours were not observed in any of the other holes drilled across Area B.

7.1.1.2 Area D

The boreholes, test pits and hand auger hole logs are included in Appendx B. The logs revealed that Area D was underlain by:

- Fill material, to depths ranging between 0.4m to 3.3m below the ground surface. Fill material generally comprised grey and grey-brown gravelly sand and silty sand, with various quantities of anthropogenic material including bricks, tiles, plastic, wire, steel, cloth, paper and sandstone boulders. The fill material was deepest through the longitudinal centre of the area from the north-western corner of the carpark, the centre of the hospital and down through the centre of the sporting field. The berms located along the southern boundary of the sporting field and along the western edge of the hospital were observed to comprise similar silty sand fill material as underlies Area D in general, though additional anthropogenic

materials noted included bitumen, ceramic roof tiles and sewer piping, shale, granite, PVC conduits and electrical cabling, concrete, aluminium cans, steel shelving, rubber tyres, metal sheeting, glass, foam, timber, milk crates, garbage bags (CTP18), and fibre cement sheeting (CTP1). Fill material was underlain by:

- Aeolian/colluvial/alluvial sands, including relic topsoils and grey silty sand overlying yellow-brown sand in the vicinity of the carpark, and relic topsoils overlying alluvial grey-brown silty sand/sand and yellow-brown sand. A red-brown iron stained alluvial layer (precursor to coffee rock) was regularly observed at the top of the alluvial profile (eg CBH113 and CBH130). Sands were encountered to depths ranging between 0.1m and 10m below the ground surface. This variation in the depth of the sands is likely to be related to the presence of a deep sandy channel trending approximately north-west to south-east through Area D. The sands were underlain by;
- At depth, between 2m-5m of residual pale grey and white clayey silt, sandy clay, and high plasticity clay were encountered overlying the bedrock (eg CBH99 and CBH105). Along the northern, eastern and western margins of the area there was generally no weathered profile above the sandstone bedrock. The residual clays graded to:
- Sandstone bedrock. Sandstone outcropping was observed along the western margin of Area D, and was recorded at up to 12m depth in the centre of the site (CBH99 and CBH105). The sandstone was cored in 5 locations for 3m and was revealed to be generally massive pale grey sandstone, with cross bedded and carbonaceous lenses. The sandstone was fractured and jointed in the upper 2 metres. The base of the sandstone was not encountered in the field investigations.

Groundwater was observed in most boreholes within fill or natural (aeolian/alluvial) sands at approximately 2.0m to 3.6m below the ground surface. Groundwater was not generally observed in borehole locations in the north-eastern corner of Area D.

7.1.2 Groundwater

7.1.2.1 Area B

Groundwater was measured at depths (within sandstone bedrock) ranging from approximately 1.0m to 2.2m below the ground surface in the five wells across Area B as indicated in the record of field measurements sheets included in Appendix C, and summarised in Table 4 below. Interpreted groundwater contours, based on the relative groundwater levels measured in the four monitoring wells in Area B are shown on Figure 5. The interpreted contours suggest that groundwater is flowing generally radially from MW7 in the central northern portion of the area which is consistent with the topography of the area. The groundwater surface level is steeper in the western half of Area B, sloping down to the south-west at a gradient of around 1:50. The groundwater surface level in the eastern portion is slightly shallower, sloping down to the south-east at around 1:100.

A light sheen was noted in wells MW7-10 during the groundwater monitoring. Given the low concentrations of hydrocarbons subsequently recorded in groundwater from these monitoring wells, it is considered possible that the sheen may have been caused by iron staining from groundwater associated with the sandstone aquifer rather than from hydrocarbon contamination.

As water was introduced into the open well holes in the process of the STRATAPAC drilling process, the process of development of the monitoring wells included pumping the wells dry. MW6 was the only well able to be pumped dry again as part of the purging process, and this well did not recover and could not be sampled. The remaining wells retained their relative water levels during purging, indicating that the water sampled in the monitoring wells is groundwater and not drilling water.

TABLE 4: SUMMARY OF MEASURED WATER LEVELS IN WELLS IN AREA B

Well ID	Screened Interval (m)	BOC (mBGL)	Elevation of TOC (mAHD) **	Water Depth (mBTOC)	Water Level (mAHD)
				23/3/05	23/3/05
CBH72 / MW6	3.0-6.0	6	43.406	2.21	41.21
MW7	3.0-6.0	6	42.770	1.00	41.77
CBH73/MW8	3.0-6.0	6	42.483	1.10	41.38
CBH74/MW9	3.0-6.0	6	42.316	1.29	41.03
MW10	3.0-6.0	6	42.325	1.32	41.01

*** Monitoring wells surveyed by NSW Department of Commerce subcontractor to AHD*
TOC – Top of Casin
mBGL – Metres below ground levelg
mBTOC – Metres below top of casing
mAHD – Metres above Australian Height datum

The water quality parameters measured during purging are summarised below in Table 5. The results indicate that the groundwater is only slightly saline, but is moderately acidic. Previous experience has shown that groundwater from sandstone aquifers routinely exhibits a pH of approximately 5 pH Units.

TABLE 5: SUMMARY OF MEASURED FIELD WATER QUALITY PARAMETERS IN AREA B

Well ID	Date	Ph (units)	EC (uS/cm)	Temperature (^{0}C)
MW6	23/03/05	4.78	511	23.6
MW7	23/03/05	4.71	1135	24.8
MW8	23/03/05	3.95	712	24.6
MW9	23/03/05	5.15	291	23.1
MW10	23/03/05	4.25	297	23.9

7.1.2.2 Area D

Groundwater was measured at depths ranging from approximately 1.96m to 3.84m below the ground surface in the nine wells across Area D in March 2005. The results are presented in the record of field measurements sheets included in Appendix C, and summarised in Table 6 below. Interpreted groundwater contours, based

on the relative groundwater levels measured in the monitoring wells in are shown on Figure 6[a]. The interpreted contours suggest that groundwater is flowing generally in a north-westerly direction towards CBH97/MW11, with a gradient of approximately 1:80. The groundwater levels in the five wells previously gauged in November 2004 (included in Table 5) are similar to those for March 2005. Groundwater levels in the June 2005 sampling round were also similar.

PSH was not encountered in any of the wells during the investigation.

Based on a preliminary geotechnical study reported for Area D (Coffey Ref: E12723/3-AU dated 23 November 2004), a deep sandstone channel exists at the southern end of Area D draining towards the south-east (towards Little Bay). From the groundwater data presented below, it is considered that the groundwater regime across Area D is unlikely to be influenced by the paleo sandstone channel, but appears to be a well-developed regime relative to the present day ground level within sands at 2m to 4m depth.

TABLE 6: SUMMARY OF MEASURED WATER LEVELS IN WELLS IN AREA D

Well ID	Screened Interval (m)	BOC (mBGL)	Elevation of TOC (mAHD) **	Water Depth (mBTOC)		Water Level (mAHD)	
				5/11/04	23/3/05	***5/11/04***	23/3/05
CBH10 / MW1	2.0 – 5.0	5	35.663	2.13	2.62	33.53	33.04
CBH11 / MW2	1.5 – 6.0	5.95	35.639	3.54	3.84	32.10	31.80
CBH13 / MW3	2.0 – 6.0	5.95	36.003	2.80	3.29	33.20	32.71
CBH14 / MW4	1.5 - 5.0	4.45	34.454	1.15	1.40	33.30	33.05
CBH19 / MW5	2.5 - 5.5	5.5	35.257	2.95	3.20	32.31	32.06
CBH97/MW11	1.5-4.5	4.5	31.987	-	1.96	-	30.03
CBH107/MW12	1.0-2.5	2.7	35.023	-	Dry	-	-
CBH112/MW113	1.5-4.5	4.5	34.983	-	2.21	-	32.77
CBH119/MW14	2.0-5.0	5.0	35.914	-	3.06	-	32.85

*** Monitoring wells surveyed by NSW Department of Commerce subcontractor to AHD*
TOC – Top of Casin
mBGL – Metres below ground levelg
mBTOC – Metres below top of casing
mAHD – Metres above Australian Height datum

*** Monitoring wells surveyed by NSW Department of Commerce to AHD*
TOC – Top of Casing

EC, pH and temperature readings measured during purging are summarised below in Table 7. The results indicate that the groundwater is slightly to moderately saline, and is slightly to moderately acidic.

[a] Contours based on methane monitoring groundwater levels recorded one day prior to groundwater sampling.

TABLE 7: SUMMARY OF MEASURED FIELD WATER QUALITY PARAMETERS IN AREA D

Well ID	Date	Ph (units)	EC (uS/cm)	Temperature (^{0}C)
MW1	5/11/04	6.63	1131	19.1
	22/03/05	5.79	482	20.9
	29/06/05	5.39	442	18.7
MW2	5/11/04	6.20	343	19.3
	22/03/05	6.19	493	21.6
	29/06/05	3.79	251	17.9
MW3	5/11/04	5.61	291	19.1
	22/03/05	6.32	271	20.4
	29/06/05	5.94	285	17.4
MW4	5/11/04	6.49	565	18.9
	23/03/05	6.34	719	21.8
	29/06/05	5.92	659	17.8
MW5	5/11/04	6.41	733	19.9
	22/03/05	5.75	656	22.5
	29/06/05	6.40	729	18.2
MW11	22/03/05	6.09	309	22.0
	29/06/05	6.47	324	18.2
MW12	29/06/05	4.31	531	17.9
MW13	23/03/05	7.18	1115	21.5
	29/06/05	6.67	1174	17.6
MW14	22/03/05	7.28	580	21.3
	29/06/05	5.54	436	18.4

7.2 PID Results

7.2.1 Phase 1

In Area B, 30 soil samples were subjected to PID headspace screening. The highest PID result was 35.6ppm. PID results varied across the site, averaging around 10ppm-20ppm. Bag samples from the boreholes drilled in the vicinity of the UST area to the north of Area B only returned marginal results, in the order of 10ppm-30ppm. Borehole CBH29 was observed to have a hydrocarbon odour during drilling. The PID samples from this borehole returned readings of only 11.6ppm and 20ppm. These results as a whole suggest that volatile ionisable organic compounds were not present at significant concentrations in the samples analysed.

In Area D, forty-one soil samples were subjected to PID headspace screening. The highest PID headspace result was 6.1ppm, suggesting that volatile, ionisable organic compounds were not present at significant concentrations in the samples collected.

The PID results are presented in Appendix D.

7.2.2 Phase 2

In Area B, 55 samples were subjected to PID headspace screening. The highest PID results were 745ppm in fill at CBH75, 400ppm in fill in CBH87, and 85ppm in fill in CBH94. PID results generally ranged between 0.1ppm and 11pm across the area. Bag samples from the boreholes drilled in the vicinity of the UST and maintenance workshop in the northern part of Area B only returned marginal results up to 5ppm. These results as a whole suggest that volatile ionisable organic compounds are not widespread across the area, however there are a number of localised hotspots (eg CBH75, CBH87 and CBH94) containing elevated VOCs.

In Area D, 179 soil samples were subjected to PID headspace screening. The highest PID headspace result was greater than the detection range of the unit at 9999pm (CBH95 and CBH96).

The sample from CBH95 was collected from sand at 2.5m depth, and the sample from CBH96 was collected from directly below asphaltic pavement. The high readings were double checked during screening and consistently recorded high results. The samples from these boreholes were analysed and the sample CBH96 0.05-0.2m (fill) recorded low concentrations of C15-C28 TPH at levels much less than the guidelines. Where available, no horizontally or vertically adjacent samples recorded significant concentrations of TPH, BTEX or PAH, though similar low concentrations of TPH were recorded in fill and sand upslope to the east (CBH128 and CBH129). The reasons for the anomalous readings are not understood, but given the low concentrations of TPH and lack of odours in the samples, these are not considered likely to represent volatile contamination in the samples and are not considered significant.

A high reading of >4000pm was identified in fill in CBH110, though TPH/BTEX and PAH analysis of this sample did not record significant concentrations.

The readings from CBH95, CBH96 and CBH110 were collected in the same screening period. Contamination of the tip or mis-calibration are possible causes for the readings, but unlikely as readings prior to and subsequently to the two samples in question did not record these anomalous concentrations. Contamination of the SPT was also not a likely cause for the readings as wash blank samples indicated that the decontamination procedures were generally adequate.

PID readings for boreholes CBH98, CBH99 and CBH100 were recorded before complete stabilisation of the readings had been achieved (results ranging from 5.5ppm to 43.6ppm), however discussion with the field staff indicated that the readings had essentially stabilised with the rate of increase slowing to negligible. Of the 12 samples from these boreholes subjected to PID screening, 7 were subsequently laboratory analysed for TPH, PAH, and BTEX or VOC. All samples reported concentrations of TPH, BTEX or VOC less than the laboratory detection limits, and only one sample recorded low concentrations of TPH (CBH98 0.0-0.2), indicating that the cessation of PID readings prior to stabilisation did not significantly affect the assessment of contamination at those boreholes. These results also indicated that the PID may have not been responding to volatile contamination in the samples.

Consistent PID readings of approximately 50ppm in fill and natural soils were recorded on the 15/3/05 in boreholes CBH128, CBH134, CBH135, CBH136, CBH137, CBH138, CBH139, indicating that the PID tip may have been contaminated after calibration but prior to the recording of these bagged samples.

The majority of PID results ranged between 0.1-10ppm, suggesting that volatile, ionisable organic compounds were not present at significant concentrations in Area D in the samples collected. The PID results are presented in Appendix D.

7.3 Methane Results

7.3.1 Phase 1

Methane readings were initially collected from the five available monitoring wells installed at Area D on 14 December 2004. Results from the readings are documented below in Table 8. No methane was recorded in the wells during Phase 1.

TABLE 8: SUMMARY OF AREA D METHANE RESULTS – NOVEMBER 2004

Well Location	Gas	Initial Reading %	During Purging%	Final Reading %
MW1	Methane	0.0	0.0	0.0
	Carbon Dioxide	12.0	12.1	12.1
	Oxygen	7.5	7.4	7.0
MW2	Methane	0.0	0.0	0.0
	Carbon Dioxide	4.1	4.1	4.0
	Oxygen	16.8	16.8	16.9
MW3	Methane	0.0	0.0	0.0
	Carbon Dioxide	8.1	8.0	8.1
	Oxygen	14.8	14.9	14.9
MW4	Methane	0.0	0.0	0.0
	Carbon Dioxide	0.5	0.5	0.5
	Oxygen	20.1	20.1	20.2
MW5	Methane	0.0	0.0	0.0
	Carbon Dioxide	4.1	4.1	4.0
	Oxygen	16.7	16.7	16.8

7.3.2 Phase 2

Methane readings were subsequently collected from the five existing and four additional monitoring wells installed at Area D on the 22 March 2005. Results from the readings are documented below in Table 9. A very low methane concentration was recorded in MW 4, and methane was not detected in the other wells. The March 2005 reading in MW4 is not considered significant, and likely indicates that very minor methane is being generated in the vicinity of MW4, but at levels not considered a potential explosion risk or impacting future building design.

TABLE 9: SUMMARY OF AREA D METHANE RESULTS – MARCH 2005

Well Location	Gas	Initial Reading %	During Purging%	Final Reading %
MW1	Methane	0.0	0.0	0.0
	Carbon Dioxide	0.1	4.1	4.6
	Oxygen	20.8	17.5	15.6
MW2	Methane	0.0	0.0	0.0
	Carbon Dioxide	3.7	3.9	3.8
	Oxygen	18.8	17.4	17.5
MW3	Methane	0.0	0.0	0
	Carbon Dioxide	6.2	6.3	0.8
	Oxygen	16.3	15.6	20.0
MW4	Methane	0.1	0.0	0
	Carbon Dioxide	3.3	2.5	0.03
	Oxygen	18.7	18.9	20.6
MW5	Methane	0.0	0.0	0.0
	Carbon Dioxide	0.0	2.4	1.1
	Oxygen	20.6	18.8	20.1
MW11	Methane	0.0	0.0	0.0
	Carbon Dioxide	0.1	4.2	4.1
	Oxygen	20.6	16.7	16.7
MW12	Methane	0.0	0.0	0.0
	Carbon Dioxide	8.9	7.3	4.0
	Oxygen	16.4	13.1	16.8
MW13	Methane	0.1	0.0	0.0
	Carbon Dioxide	0.1	5.3	3.7
	Oxygen	20.7	14.4	16.1
MW14	Methane	0.0	0.0	0.0
	Carbon Dioxide	0.0	8.7	3.8
	Oxygen	20.5	13.1	16.1

7.4 Laboratory Results

Soil sample analytical results for Area B are summarised in the attached Tables LR1 (Phase 1) and LR3 (Phase 2), and for Area D in Tables LR2 (Phase 1) and LR4 (Phase 2). Groundwater analytical results are summarised in Tables LR5 (Phase 1) and LR6-LR7 (Phase 2). The analytical reports for both phases of the investigation are included in Appendix E

7.5 Quality Assurance / Quality Control (QA/QC) Results And Data Usability

Field QA/QC results are summarised in Appendices F1 and F2. A data validation report for each Coffey batch has been prepared for QA/QC purposes and is presented in Appendices F1 and F2. The conclusions of the data usability assessment are summarised in Table 10 below.

TABLE 10: SUMMARY OF DATA USEABILITY ASSESSMENT

Area	Analysis Request No.	Batch Nos.	Sample Handling	Precision & Accuracy	Field QA/QC	Lab QA/QC	Data Usability
B&D	Phase 1	4E2049	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E2107	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E1589A	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E1589	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E1903	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E2105	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		4E2051	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
B	Phase 2 - 1	5e0951	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0959	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0982	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		ES0502044	Satisfactory	Satisfactory	NA	Partially Satisfactory	Data directly useable
		ES0502250	Satisfactory	Satisfactory	NA	Partially Satisfactory	Data directly useable
	Phase 2 - 2	5e0999	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e1018	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable

Area	Analysis Request No.	Batch Nos.	Sample Handling	Precision & Accuracy	Field QA/QC	Lab QA/QC	Data Usability
		5e1051	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e1147	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		ES0502247	Satisfactory	Satisfactory	NA	Satisfactory	Data directly useable
D	Phase 2 - 1	5e0952	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0960	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0984	Satisfactory	Partially Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0952A	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e0984A	Satisfactory	Partially Satisfactory	Satisfactory	Satisfactory	Data directly useable
		ES0502042	Partially Satisfactory	Satisfactory	NA	Partially Satisfactory	Data directly useable
	Phase 2 - 2	5e0998	Satisfactory	Partially Satisfactory	Satisfactory	Partially Satisfactory	Data directly useable
		5e1052	Satisfactory	Satisfactory	Partially Satisfactory	Satisfactory	Data directly useable
		5e1071	Satisfactory	Satisfactory	Partially Satisfactory	Satisfactory	Data directly useable
		5e1100	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable
		5e1019	Satisfactory	Satisfactory	Partially Satisfactory	Satisfactory	Data directly useable
		ES0502202	Satisfactory	Satisfactory	NA	Partially Satisfactory	Data directly useable
	Phase 2 - 3	5e1120	Satisfactory	Partially Satisfactory	Partially Satisfactory	Partially Satisfactory	Data directly useable
		5e1121	Satisfactory	Satisfactory	Partially Satisfactory	Satisfactory	Data directly useable

Area	Analysis Request No.	Batch Nos.	Sample Handling	Precision & Accuracy	Field QA/QC	Lab QA/QC	Data Usability
	Phase 2 -4	5e1191	Satisfactory	Satisfactory	Partially Satisfactory	Satisfactory	Data directly useable
		ES0502313	Satisfactory	Satisfactory	NA	Satisfactory	Data directly useable
		ES0502797	Satisfactory	Satisfactory	NA	Satisfactory	Data directly useable
		5E2421	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Data directly useable

Relative Percentage Differences (RPDs) of some intralaboratory and interlaboratory field duplicate pairs exceeded the control limit of 50% for some heavy metals and PAHs in soil samples. The duplicate PAH data for CTP13 0.4-0.6 was used rather than the primary data as in this case the duplicate result exceeded the HIL. The RPDs are considered to be a reflection of the heterogeneity of the fill material sampled, and it was considered in the QA/QC assessment that other RPD exceedances between samples with low concentrations would not affect the useability of the data. Other field QA/QC such as trip blanks, trip spikes and wash blanks were within control limits.

Laboratory QA/QC included method blanks, laboratory duplicates, matrix spikes, surrogate spikes and laboratory control samples. Contaminants were not detected in the method blank while the recoveries of matrix spikes, surrogate spikes and laboratory control samples were generally within control limits.

Based on the data quality assessment it is considered that the majority of data reasonably represents the conditions at the sampling locations at the time of sampling.

It is considered that low concentrations of toluene detected in wells in Area D are likely to represent false positives (potentially carry over from previous toluene impacted samples on the laboratory sample equipment), given the similar low concentrations in four of the five wells and that toluene was not detected in any of these wells in the subsequent two sampling rounds.

The lead concentrations in groundwater in Area D in the second sampling round were well above the lead concentrations in these wells in the first and third sampling rounds. This could also potentially be due to QA/QC issues with the second sampling round.

7.6 Comparison of Results with Investigation levels

7.6.1 Soil

Comparison of the results from the Stage 2 ESA to the soil investigation levels listed in Section 5 are summarised below. The results are presented in the attached Tables LR1-LR4. As the final layout of the developments have not been finalised, there could potentially be some parts of each area that fall under commercial / industrial landuse and some parts open space landuse. Therefore, the results have been

compared to both the commercial / industrial as well as open space criteria. Figures 7 and 8 present the locations of exceedance for Areas B and D respectively.

7.6.1.1 Area B

- Heavy metals, including arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury, were either not detected above the laboratory detection limits or were detected at concentrations below human health investigation levels (HILs) for both commercial / industrial and open space;
- TPH C10-C36 was detected 14 of the soil samples analysed, but at concentrations up to half the investigation level (SIL) of 1000mg/kg;
- VOC compounds (including naphthalene, methylene chloride, and 1.2.4-trimethylbenze) were detected at low concentrations in three of the samples analysed (CBH79 0.2-0.3, CBH122 0.5-0.7 and CBH123 1.5-1.7). TPH and BTEX concentrations in these samples were recorded at less than laboratory detection limits. No NSW EPA VOC guidelines are available, but given the low concentrations recorded, these were not considered significant;
- Benzo(a)pyrene was detected in four samples (CBH61 0.8-0.9, CBH87 0.0-0.3, CBH76 0.7-0.9 and HA25 0.0-0.1), at a concentration greater than the HIL for open space use, but below the commercial / industrial HIL. Benzo(a)pyrene was detected in six additional samples but at concentrations less than the HILs;
- Total PAH were recorded in one sample at concentrations greater than the HIL for open space use (HA25 0.0-0.1) but below the commercial / industrial HIL. Total PAH concentrations were detected in 15 additional samples analysed but at concentrations below both the open space and commercial / industrial HILs;
- Asbestos was detected in the three fibre cement fragments collected from the surface of the temporary internal waste storage area (AECB5). One sample of fibre cement material collected at HA24 was not analysed, and could potentially contain asbestos. Asbestos was not detected in any of the soil samples analysed; and
- TPH C6-C9, BTEX, OCP and OPP were below the laboratory detection level in the soil samples analysed.

7.6.1.2 Area D

- Heavy metals, including arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury, were not detected at concentrations exceeding the commercial / industrial or open space HILs in samples collected from Area D;
- The concentration of copper, nickel and / or zinc exceeded the phytotoxicity based EIL in 8 samples (CBH24 1.0-1.3, CBH96 0.05-0.2, CBH98 0.0-0.2, CBH102 1.0-1.45, CBH103 1.1-1.45, CBH119 1.5-1.9, CBH139 0.0-0.2, and CTP13 0.4-0.6). Heavy metal concentrations in all other samples were below the EILs;

- TPH C10-C36 was detected in one sample (CTP1 1.0-1.2) at concentrations greater than the SIL of 1000mg/kg. TPH C10-C36 was detected in 45 other soil samples analysed, but at concentrations below the SIL;
- Benzo(a)pyrene was detected in six soil samples (CBH10/MW1 1.0-1.2, CBH23 1.0-1.3, CBH65 1.0-1.3, CBH130 0.05-0.2, CBH141 0.5-0.95 and HA15 0.4-0.5) at concentrations exceeding the HILs for open space landuse but below the HILs for commercial / industrial landuse, and two samples (CTP1 1.0-1.2 and CTP13 0.4-0.6) with concentrations exceeding the HILs for commercial / industrial landuse. Benzo(a)pyrene was detected in a further 48 samples analysed but at concentrations below the HILs for both landuses;
- Total PAH was detected in four samples (HA15 0.4-0.5, CBH128 0.0-0.2, CBH140 1.4-1.5 and CBH141 0.5-0.95) at concentrations exceeding the HILs for open space landuse but below the HILs for commercial / industrial landuse, and two samples (CTP1 1.0-1.2, and CTP13 0.4-0.6) exceeding the HILs for commercial / industrial landuse. Total PAHs were detected in a further 56 samples analysed but at concentrations below the HILs for both landuses;
- TPH C6-C9 was detected in one sample (CBH105 2.4-2.85) at concentrations below the SIL of 65mg/kg. All other samples recorded concentrations of TPH C6-C9 below the laboratory detection limit; and
- Concentrations of VOCs, OCP, OPP PCB, and asbestos were below the laboratory detection levels in the soil samples analysed from across Area D.
- SPOCAS analyses recorded peroxide oxidisable sulfur (S_{POS}) exceeding the ASS guidelines in all five samples, and the total potential acidity (TPA) results exceeding the ASS guidelines in two samples.

7.6.2 Groundwater

Comparison of the results from the Stage 2 ESA to the groundwater threshold levels listed in Section 5 are summarised below. The results are presented in the attached Tables LR5-LR8. Figures 9 and 10 present the locations of groundwater exceedances for Areas B and D respectively.

7.6.2.1 Area B

- Concentrations of arsenic exceeded the ANZECC (2000) trigger levels in MW7 but were below the drinking water guideline;
- Concentrations of cadmium exceeded the ANZECC (2000) trigger levels in MW7 but were below the drinking water guideline;
- Concentrations of nickel exceeded the ANZECC (2000) trigger levels in MW7 but were below the drinking water guideline;
- Concentrations of lead exceeded the ANZECC (2000) trigger levels in MW7 to MW9. The lead concentration also exceeded the drinking water guideline in MW7 and MW9;
- Concentrations of zinc exceeded the ANZECC (2000) trigger levels in MW7 to MW10 but were below the drinking water guideline;

- Concentrations of other heavy metals were below both the ANZECC (2000) and drinking water guidelines.
- TPH was detected in MW10 at a concentration marginally exceeding the investigation level. TPH was detected in MW8 and MW9 at concentrations below the investigation level;
- Concentrations of BTEX compounds (benzene, ethyl benzene and/or o-xylene) were recorded in MW8 and MW 10 less than the ANZECC (2000) trigger levels. Benzene concentrations exceeded the drinking water guideline in MW8; and
- Concentrations of the PAH compounds (napthelene, acenapthene and/or fluorene) were recorded in MW8 and MW10. The concentrations of napthalene were less than the ANZECC (2000) trigger levels. The laboratory detection limits for flouranthene, anthracene and benzo(a)pyrene were greater than the low reliability ANZECC (2000) guidelines.

7.6.2.2 Area D

In the first round of sampling (from well MW1 to MW5 only):

- Concentrations of arsenic exceeded the ANZECC (2000) trigger levels in MW1 but were below the drinking water guideline;
- Concentrations of copper exceeded the ANZECC (2000) trigger levels in MW3 to MW5 but were below the drinking water guideline;
- Concentrations of zinc exceeded the ANZECC (2000) trigger levels in MW1 and MW4 but were below the drinking water guideline;
- Concentrations of other heavy metals were below both the ANZECC (2000) and drinking water guidelines.
- TPH was not detected in any of the samples analysed.;
- Toluene was detected at low concentrations below both the ANZECC (2000) and drinking water guideline in wells MW1 to MW4. It is considered that this is more likely due to laboratory error than actual toluene in the samples. Other BTEX compounds were not detected in any of the samples analysed; and
- PAH and VOC compounds were not detected in the samples.

In the second round of sampling (from wells MW1 to MW5 and MW11 to MW14):

- Concentrations of arsenic exceeded the ANZECC (2000) trigger levels in MW1, MW2, MW5, MW11 and MW14. The arsenic concentration also exceeded the drinking water guideline in MW1 and MW2;
- Concentrations of total chromium exceeded the ANZECC (2000) trigger levels for chromium VI in MW1;
- Concentrations of copper exceeded the ANZECC (2000) trigger levels in MW2 and MW3 but were below the drinking water guideline;
- Concentrations of lead exceeded the ANZECC (2000) trigger levels in MW1, MW2, MW11 and MW14. The lead concentration also exceeded the drinking water guideline in MW1, MW2 and MW11;

- Concentrations of zinc exceeded the ANZECC (2000) trigger levels in MW1, MW2, MW3 and MW11 but were below the drinking water guideline;
- Concentrations of other heavy metals were below both the ANZECC (2000) and drinking water guidelines.
- TPH was detected in MW1 marginally exceeding the investigation level. TPH was not detected in any of the other samples analysed.;
- BTEX and PAH compounds were not detected in any of the samples analysed;
- Ammonia was detected at concentrations exceeding the ANZECC (2000) trigger levels and drinking water guidelines in MW1, MW4, MW13 and MW14;
- Nitrate was detected at elevated concentrations in MW2 and MW5;
- Total phosphorus and total nitrogen were detected at elevated concentrations in some of the wells.

In the third round of sampling (from wells MW1 to MW5 and MW11 to MW14):

- Concentrations of arsenic exceeded the ANZECC (2000) trigger levels in MW2 and MW14 but were below the drinking water guideline;
- Concentrations of copper exceeded the ANZECC (2000) trigger levels in MW2 and MW3 but were below the drinking water guideline;
- Concentrations of zinc exceeded the ANZECC (2000) trigger levels in MW2, MW3, MW5 and MW11 to MW13 but were below the drinking water guideline;
- Concentrations of other heavy metals were below both the ANZECC (2000) and drinking water guidelines.
- TPH, BTEX and PAH compounds were not detected in the samples;
- Ammonia was detected at concentrations exceeding the ANZECC (2000) trigger levels and drinking water guidelines in MW1 and MW4;
- Total phosphorus and total nitrogen were detected at elevated concentrations in some of the wells.

A comparison of the results between the three sampling rounds indicates that the metal concentrations in the first and third sampling rounds were generally similar. The lead concentrations in the second round were generally high than both the other rounds and could potentially have been attributable to laboratory quality issues. A TPH concentration exceeding the groundwater investigation criteria was recorded in MW1 in the second round, but was recorded at less than the laboratory detection limits in the first and third rounds. Low concentrations of toluene were recorded in MW1, MW2, MW3, and MW4 in the first round, but were not recorded above the laboratory detection limits in either of the second or third rounds, indicating that toluene is not present at significant concentrations in the wells. The nutrient levels were variable between the second and third rounds with ammonia concentrations dropping in some wells but increasing particularly in MW1. nitrate was detected in two wells at elevated levels in the second sampling round but not in the third round.

8. DISCUSSION OF RESULTS

8.1 Area B

The following subsections present discussions regarding each of the potential contamination issues identified in the Stage 1 PESA and first phase of the Stage 2 ESA within Area B.

8.1.1 UST and Maintenance Workshop

The site history review and site walk over undertaken as part of the PESA revealed the presence of up to 7 underground storage tanks (USTs) located in Area B to the north off the maintenance workshop. The USTs are used to fuel maintenance vehicles onsite, mainly for diesel.

Sandstone bedrock was encountered at depths ranging between 0.5m to 1m depth in the boreholes drilled in the vicinity of the USTs. This suggests that the USTs are likely to have been installed into pits excavated into the sandstone bedrock.

Hydrocarbon contamination was generally not detected in the samples collected from the boreholes targeting the USTs and maintenance area. However oil staining was noted in natural soil in CBH29, and low concentrations of the VOC compounds (naphthalene, methylene chloride, and 1.2.4-trimethylbenze) were recorded in fill or natural sands in boreholes downslope of the USTs (CBH79, CBH122 and CBH123). These boreholes were also located upslope and downslope of the maintenance area, and therefore the observed VOC could also potentially be sourced from leakage of chemicals from the maintenance area. No significant PID readings or TPH concentrations were recorded in boreholes located downslope of the USTs.

Generally the presence of the shallow bedrock meant that the boreholes were too shallow to detect leakage from the USTs. The majority of contamination (if present) would be expected to be contained within the sandstone pits in which the USTs are installed. However contamination could potentially migrate through any joints or clayey seams in the sandstone, or through the shallow fill/sands if overtopping occurred.

Of the four monitoring wells able to be sampled (MW7-MW10), MW8 and MW9 recorded generally low concentrations of TPH, BTEX and/or PAH, and MW10 located downgradient of the UST and workshop recorded concentrations of TPH and naphthalene (PAH) close to the guideline level. It is noted that the benzene concentration in MW8 exceeds the drinking water guideline. This suggests that some leakage of petroleum hydrocarbons from the USTs and migration of contamination into the sandstone bedrock and associated aquifer has occurred.

8.1.2 Waste Storage

The site history review and site walk over undertaken as part of the PESA revealed the presence of a fenced area for the temporary storage of waste located between the stores building and nursery in Area B. The area was observed to contain a number of small stockpiles separated by products, including a stockpile of ash, a pallet of empty oil drums, scrap metal stockpile, scrap wood stockpile, green waste, rubbish bins, and domestic refuse. The area was observed to be unpaved and ash and a small number of fragments of fibre cement sheeting were observed on the surface. No oil staining was observed in the area;

Three samples were collected of the fibre cement material during the site inspection carried out during the Stage 2 ESA, and analysed for asbestos. The analytical results confirmed that the fibre cement sheeting fragments contained asbestos. The four boreholes drilled in this area did not encounter fibre in the fill at depth, and it is considered that the fibre cement sheeting has been sourced generally not from the placement

of the fill in Area B, but more from the processing of waste building materials in the waste storage area.

Soil samples analysed from the four boreholes drilled in the area indicated that the shallow fill (upper 0.3m) contains low concentrations of heavy metals, TPH and PAH, with benzo(a)pyrene concentrations exceeding the open space and recreational HIL but below the commercial / industrial HIL in CBH87 0.0-.03m.

8.1.3 Filling and Leaching of Building Materials

The site history review and site walk over undertaken as part of the PESA revealed that Area B had been filled to an unknown extent. The source and contamination status of imported fill material was unknown, and it was recommended that a Stage 2 ESA be conducted to assess the importation of potentially contaminated fill, and the presence of potential PAH contaminated fill to be present sourced from boiler ash generated onsite.

The PESA also identified that given the age of the buildings in the area, leaching or weathering of contaminants potentially contained in building materials (i.e. lead from lead based paint, zinc from galvanised corrugated iron and asbestos from fibro) was identified as a potential contamination issue.

Most of the boreholes drilled in the Stage 2 ESA in Area B encountered fill. Fill material was encountered from the surface (or beneath concrete) to depths ranging between 0.025m to 1.2m below ground surface, and mainly comprised a grey to grey-brown sand, sandy gravel and gravelly sand. Ash was suspected to be present throughout the fill profile, though no ash layers were recorded.

The analytical results of the soil samples collected in the fill revealed that the fill generally contains low concentrations of heavy metals (zinc occasionally exceeded phytotoxicity guidelines), low to non-detectable concentrations of TPH and PAH, and non-detectable concentrations of BTEX, OCP and PCB. The exceedances of the provisional phytotoxicity investigation levels were marginal and localised and are hence not considered likely to pose a significant phytotoxic risk.

Concentrations of benzo(a)pyrene were recorded marginally exceeding the open space guidelines but below the commercial / industrial HILs in natural soils beneath the fill in CBH61 (0.8-0.9) and CBH76 (0.7-0.85m) both adjacent to each other in the north-western corner of Area B, with the overlying fill recording non-detectable or low concentrations of benzo(a)pyrene and total PAH (Figure 7).

A piece of fibro cement sheeting was observed in the fill at 0.8m depth in HA24, located beneath the eastern most maintenance building. This sample was not analysed, but was suspected of containing asbestos.

Based on the investigations carried out to date the fill across Area B is considered to contain concentrations of heavy metals, TPH, BTEX, OCP, PCB and PAH at levels acceptable for the proposed commercial industrial landuse. Therefore, it is generally considered that the importation of fill and leaching of building materials has not resulted in chemical contamination being introduced to Area B which would render it unsuitable for the proposed commercial/industrial redevelopment.

The source of PAH concentrations in natural soils in the north-western corner of Area B is not known. However, given the depth of the impacts, that the concentrations are less than the commercial/industrial HIL, and less than 2.5 times the open space HIL, this area, the PAHs in the natural soils are not considered to require remediation.

The remedial strategy for Area B will need to consider the potential for asbestos containing materials to be present in the fill, as observed in HA24.

8.1.4 Nursery

The site history review and site walk over undertaken as part of the PESA revealed that there was the potential for pesticide and herbicide usage in the nursery.

Four boreholes and three handaugers were drilled in the former nursery as part of the Stage 2 ESA. The boreholes encountered a thin layer of similar fill materials to that encountered across the remainder of Area B underlain by alluvial soils and sandstone The shallow soil sampling and analysis of this area indicated that concentrations of copper were recorded greater than the phytotoxicity SIL in HA25 0.0-0.1, concentrations of benzo(a)pyrene and Total PAH were recorded at greater than the open space HIL in HA25 0.0-.01m, and low concentrations below the soil investigation levels of TPH were recorded in CBH92 0.0-0.1.

Given that the PAH concentrations are less than the commercial/industrial HIL and localised remediation of PAHs in this area is not considered necceasry.

8.1.5 Groundwater

Groundwater inflows were encountered in the boreholes located in the southwestern corner of Area B at depths in the fill/natural sands ranging between 0.6-1.4m below the groundsurface. The standing water levels were measured at depths in the sandstone bedrock in the upper northern part of Area B ranging from approximately 1.0m to 2.2m below the ground surface. Interpreted groundwater contours suggest that groundwater is flowing generally radially from MW7 in the central northern portion of the area, approximately parallel to the topography of Area B.

Of the four monitoring wells able to be sampled (MW7-MW10),MW8 and MW9 recorded low concentrations of TPH, BTEX and/or PAH, and MW10 located downgradient of the UST and workshop recorded concentrations of TPH and naphthalene (PAH) close to the ANZECC (2000) aquatic trigger level. Benzene, concentrations exceeded the drinking water guideline in MW8. Concentrations of heavy metals, including arsenic, cadmium, copper, nickel, lead and zinc, were recorded exceeding the ANZECC (2000) aquatic trigger levels. Lead and arsenic concentrions also exceeded the drinking water guideline in some of the wells.

The TPH, BTEX and naphthalene detections indicate that some leakage of petroleum hydrocarbons from the USTs or maintenance area has likely occurred and impacted the groundwater within the sandstone.

Given the relatively low levels of contaminant concentrations in the groundwater contamination, the ongoing proposed commercial use of the area and large distance to potential groundwater receptors, it is considered that the groundwater contamination is unlikely to pose a significant risk to users of the site or potential groundwater receptors. However, further monitoring/validation of the groundwater in Area B should be undertaken following removal of the USTs and other potential hydrocarbon sources to confirm concentrations of contaminants in groundwater. The need for groundwater remediation can be assessed at that time.

It is noted that a sheen was observed in well MW7, MW8, MW9 and MW10. The hydrocarbon concentrations that would normally be expected to produce a hydrocarbon sheen are significantly higher than those recorded on the site. It is considered possible that the sheen could be attributed to iron staining from the sandstone aquifer and not the presence of hydrocarbons in the groundwater. This would also need to be confirmed by further monitoring.

8.2 Area D

The following subsections present discussions regarding each of the potential contamination issues identified in the Stage 1 PESA and first phase of the Stage 2 ESA within Area D.

8.2.1 Subsurface Filling and Dams

The site history review and site walk over undertaken as part of the PESA revealed that there was the potential for contamination in Area D related to historical filling of the sporting field and beneath the hospital with waste materials, filling of small dams with potentially contaminated material, and spreading of boiler ash across Area D.

Boreholes drilled in the vicinity of ash deposit areas and bulk grab samples collected from current ash stockpiles in Area A (reported separately) indicated that the ash was not significantly contaminated.

Boreholes and test pits drilled and excavated across the sportsfield, through the hospital, along the hospital margins, in the filled dams, and through the northern carpark revealed that the entire Area D has been filled to depths ranging between 0.4m to 3.3m below the ground surface. Fill material generally comprised grey and grey-brown gravelly sand and silty sand, with various quantities of anthropogenic material including bricks, tiles, plastic, wire, steel, cloth, paper and sandstone boulders. The fill material was deepest through the longitudinal centre of the area from the north-western corner of the carpark, the centre of the hospital and down through the centre of the sporting field. The amount of anthropogenic materials in the fill was highest within the filled dam (AEC D3).

Analytical results of the soil samples submitted indicated that:

- The fill was not significantly impacted with heavy metals, though concentrations of copper, nickel and/or zinc exceeded the phytotoxicity based EILs in seven samples (CBH24 1.0-1.3, CBH96 0.05-0.2, CBH98 0.0-0.2, CBH102 1.0-1.45, CBH103 1.1-1.45, CBH119 1.5-1.9 and CBH139 0.0-0.2);
- Benzo(a)pyrene was detected in six soil samples (CBH10/MW1 1.0-1.2, CBH23 1.0-1.3, CBH65 1.0-1.3, CBH130 0.05-0.2, CBH141 0.5-0.95 and HA15 0.4-0.5) at concentrations exceeding the HILs for open space landuse but below the HILs for commercial / industrial landuse;
- Total PAH was detected in four samples (HA15 0.4-0.5, CBH128 0.0-0.2, CBH140 1.4-1.5 and CBH141 0.5-0.95) at concentrations exceeding the HILs for open space landuse but below the HILs for commercial / industrial landuse; and
- Asbestos was not recorded in the samples analysed. The potential for unidentified asbestos containing fragments being present in the fill remains due to the nature and age of the waste materials observed in the fill.

Methane was recorded at just above the instrument detection limit in MW4 only, suggesting that significant methane is not being generated by the fill material. This level is not considered a potential explosion risk.

95% Upper Confidence Limit (UCL) calculations were undertaken for fill materials in subsurface fill beneath the sportsfield. This dataset included locations CBH10 and CBH65. The 95% UCL calculations are presented in Table LR9 and indicate that the 95% UCL of TPH, BTEX and PAH are less than the open space HILs. Excluding an outlier result in CBH119 1.5-1.95m for nickel, the 95% UCLfor heavy metals are also less than the phytotoxicity EILs.

Though the fill was heterogeneous, given that the majority of boreholes and test pits were drilled through the fill into underlying natural soils, the number of samples analysed and the generally low concentrations of contaminants encountered, we consider that adequate investigations have been undertaken to draw broad conclusions regarding the depths and contamination status of the fill.

The borehole and test pit drilling indicated that broad scale importation and dumping of d fill/rubbish has occurred in this area, but that detected concentrations of potential common chemicals of concern for such dumped material are less than the commercial / industrial landuse in the subsurface fill.

However, given the uncontrolled and heterogeneous nature of the fill and the resulting potential for random contamination hotspots including the potential for asbestos containing materials to be present, Coffey recommends that remediation / management of the fill across Area D be undertaken.

8.2.2 Surface Fill Berms

The site history review and site walk over undertaken as part of the PESA revealed that there was the potential for contamination in Area D related to the placement of elongated fill stockpiles adjacent to the hospital and along the sporting field at Area D.

The berms located along the southern boundary of the sporting field and along the western edge of the hospital were observed to be up to 2.5m in height and comprise similar silty sand fill material as underlies Area D in general, though additional anthropogenic materials noted included bitumen, ceramic roof tiles and sewer piping, shale, granite, PVC conduits and electrical cabling, concrete, aluminium cans, steel shelving, rubber tyres, metal sheeting, glass, foam, timber, milk crates, garbage bags (CTP18), and fibre cement sheeting (CTP1). The proportion of anthropogenic materials in the berms varied throughout the berms but was generally high. Test pits CTP2, CTP3, CTP4, CTP14 and CTP17 did not reach the base of the fill either due to maximum reach of the equipment or refusal on concrete pieces. However, adjacent test pits and boreholes did extend to the base of the fill and encountered similar materials.

Analytical results of the soil samples submitted indicated that:

- The fill was not significantly impacted with heavy metals, though concentrations of zinc exceeded the phytotoxicity based EILs in 1 sample (CTP13 0.4-0.6);
- TPH C10-C36 was detected in one sample (CTP1 1.0-1.2) at concentrations greater than the SIL of 1000mg/kg. TPH C10-C36 was detected in 45 other soil samples analysed, but at concentrations below the SIL;
- Benzo(a)pyrene was detected in two samples (CTP1 1.0-1.2 and CTP13 0.4-0.6) with concentrations exceeding the HILs for commercial / industrial landuse by more than 250%;
- Total PAH were detected in two samples (CTP1 1.0-1.2, and CTP13 0.4-0.6) exceeding the HILs for commercial / industrial landuse;
- Asbestos was not detected in the fibre cement sheeting samples submitted for analysis from CTP1. The fibre cement sheeting fragment from CTP17 was not tested. It is considered that there is the potential for unidentified asbestos containing fragments to be present within the fill stockpiles.

Given the variable nature of the anthropogenic materials encountered in the fill berms, it is likely that contamination would be randomly located throughout the fill profile and not necessarily limited to the identified hotspots.

For this reason, it is considered that either additional investigations be undertaken on the berm to allow further assessment of the presence of contamination or that it be assumed that the entire berms are contaminated and remediation of the mounds be undertaken accordingly.

8.2.3 Leaching from Buildings

The site history review and site walk over undertaken as part of the PESA revealed that leaching or weathering of contaminants potentially contained in building materials (i.e. lead from lead based paint, zinc from galvanised corrugated iron and asbestos from fibro) was identified as a potential contamination issue for Area D.

The analytical results of the soil samples collected in the shallow fill revealed that the fill generally contains low concentrations of heavy metals and non-detectable concentrations of asbestos.

8.2.4 Construction Compound

The site history review and site walk over undertaken as part of the PESA revealed that a construction compound located between the northern edge of the existing hospital and the carpark could result in the spillage of chemicals in that portion of Area D.

This compound had been removed by the Stage 2 ESA, and one borehole was drilled in that area (CBH9) and two boreholes downlsope (CBH134 and CBH135).

Analysis of soil samples from the surface or within the fill in these boreholes indicated that concentrations of heavy metals, TPH and PAH were recorded at levels less than the phytotoxicity EILs, the SIL and open space HILs. It is considered the concentrations detected are likely to be associated with the general fill and not with the former compound.

8.2.5 Groundwater

Groundwater inflows were encountered in the majority of boreholes in Area D at depths in the fill/natural sands at approximately 2m-4m below the ground surface. The standing water levels were measured in the eight monitoring wells containing water, and ranged between 1.96m to 3.84m below the ground surface. Interpreted groundwater contours suggest that groundwater is flowing to the northwest. From the groundwater data available, it is considered that the groundwater regime across Area D is unlikely to be influenced by the paleo sandstone channel, but appears to be a well-developed regime relative to the present day ground level.

The groundwater monitoring indicated that concentrations of heavy metals including arsenic, zinc, copper and lead exceeding the ANZECC (2000) trigger levels were detected in a number of wells. Lead and arsenic concentrations were also detected exceeding the Australian Drinking Water Guidelines in a number of wells The elevated lead concentrations were only present in the second round and could potentially be attributable to laboratory QA/QC problems. It is considered that the metals could potentially be attributable to leaching from the fill material and also could be migrating onto the site given the comparable levels across the site. Generally, the metal concentrations were comparable in the majority of wells across the site and at concentrations typically encountered in many parts of the Botany Sands aquifer. Given the above and the distance to the nearest surface water body, it is considered that the metals are unlikely to present a significant risk to aquatic ecosystems. Given the metal concentrations were generally below the drinking water

guidelines, it is considered that the metals in groundwater would not pose a significant risk to potential domestic users of the groundwater such as the bores registered for domestic use 500m to the north-west of Area D.

TPH was recorded in MW1 exceeding the investigation level in the second round. TPH was not detected in any of the other wells in the second sampling round nor in any wells including MW1 in the other two sampling rounds. Toluene was detected at low concentrations in four of the five wells in the first sampling round. Toluene was not detected in these wells in either of the other two sampling rounds, suggesting that the toluene detected may have been a false positive. In any case the concentrations detected are not considered to be significant. Other VOCs and PAH compounds were not detected. This suggests that significant petroleum hydrocarbon, VOC and PAH contamination is not present in the groundwater . .

Ammonia concentrations exceeding both the ANZECC (2000) trigger levels and drinking water guidelines were detected in wells MW1, MW4, MW13 and MW14 during the second sampling round and MW1 and MW4 during the third sampling round. All of these wells are within the sports field in the southern part of Area D. The highest concentration in the second sampling round was in MW13 (4.2mg/L) although the ammonia concentration at this location decreased to 0.04mg/L in the third sampling round. The highest concentration in the third sampling round was in MW1 (8.8mg/L) compared to 1mg/L in the second sampling round at this location. Elevated nitrate concentrations were detected in MW2 and MW5 in the second sampling round potentially indicating oxidation of ammonia.The nitrate concentrations exceeded the trigger values that could indicate physical stresses to marine water bodies. However the nitrate concentrations were below the drinking water guidelines. Furthermore, significant nitrate concentrations were not detected in the third sampling rounds in any of the wells. Overall, the data suggests that elevated ammonia is present within the sports field in the southern part of Area D. The ammonia appears to be being oxidised to nitrate prior to it migrating from the site. Well MW11, which is a downgradient well, did not contain significant concentrations of nutrients indicating that widespread nutrients are not migrating from the site. Given the above and the distance to the nearest surface water body, it is considered that the nutrients are unlikely to pose a significant risk to aquatic ecosystems. Given that ammonia does not appear to be migrating from the site at significant concentrations and that the nitrate concentrations are below the drinking water guidelines, it is considered that the nutrients are in groundwater would not pose a significant risk to potential domestic users of the groundwater such as the bores registered for domestic use 500m to the north-west of Area D. The source of the nutrients could potentially be degredation of organic matter in the fill material although significant putrescible waste was not observed in the fill material (based on visual observations and the lack of methane being generated). Other potential sources could be leaking from sewers or application, application of fertilisers on the playing field and/or breakdown of natural organic material in the site soils. Given that significant ammonia does not appear to be migrating beyond the site boundary and that elevated nitrate concentrations were not detected in the wells in the final round of groundwater monitoring and in any case were below the drinking water guidelines, the nutrients are considered unlikely to pose a significant risk to human health or the environment.

8.2.6 Acid Sulfate Soils

Preliminary acid sulphate soil (ASS) testing was undertaken of a range of materials close to or below the groundwater level. A total of 5 samples were analysed, with all samples recording potential acidity, sulfidic acidity or oxidisable sulfur greater than the guideline concentrations. This indicates the potential for acid sulphate soils to be present.

Once the details of the proposed development, including proposed modification to the groundwater level and soils below the groundwater level that will be disturbed, are known, further specific ASS testing could be undertaken targeting the materials that may be disturbed. Alternatively it could be assumed that the natural soils are potential acid sulphate and a management plan can be prepared accordingly.

9. SIGNIFICANT RISK OF HARM

The following section presents an assessment of whether contamination at the site presents a Significant Risk of Harm (SROH) as defined in the Contaminated Land Management Act (CLMA 1997).

Under the provisions of the CLMA (1997), owners and/or operators of a site are required to notify the NSW EPA of contamination after they become aware that contamination is presenting a potential SROH.

It is important to note that the NSW EPA is the sole arbiter of SROH although they have prepared guidelines which set out the range of considerations for those who encounter contamination to assist in assessing whether contamination presents a significant risk of harm and whether reporting under Section 60 of the CLMA is required.

NSW EPA (1999a) lists the matters requiring consideration in the assessment of the potential for SROH as follows:

- Whether the contamination of the land has already caused harm;
- Whether the substances are toxic, persistent or bioaccumulative, are present in large quantities or high concentrations or occur in combinations;
- Whether there are exposure pathways available to the substances;
- Whether the uses to which the land and adjoining land are currently being put are such to increase the risk of harm;
- Whether the substances have migrated or are likely to migrate from the land;
- Any guidelines made or approved by the NSW EPA on contamination and remediation.

9.1 Area B

An assessment of these matters requiring consideration in the assessment of SROH is presented in Table 11.

TABLE 11: ASSESSMENT OF SROH FROM SOIL AND SHALLOW GROUNDWATER IN AREA B

NSW EPA (1999a) Matters Requiring Consideration	Soil	Groundwater
Whether the contamination has already caused harm?	There is no evidence that the soil contamination has already caused harm.	There is no evidence that the groundwater contamination has already caused harm.
Whether the substances are toxic, persistent or bioaccumulative, are present in large quantities or high concentrations or occur in combinations?	Heavy metals TPH, BTEX, PAHs, OCP, OPP, PCB, and VOC were not detected in soil at concentrations exceeding the SIL/HIL applicable to commercial / industrial landuse. Asbestos was detected in surface fill in the waste storage area. Asbestos is persistent and carcinogenic.	TPH can be toxic at high concentrations depending on its constituents. The heavier fractions are more persistent. TPH is generally present at moderate concentrations in localised areas. VOC compounds can be toxic although normally at higher concentrations than those detected. Certain heavy metals are bioaccumulative and toxic.
Whether there are exposure pathways available to the substances?	Asbestos has been identified in fragment of waste materials at the surface of the waste storage area and hence there is a potential exposure pathway. Soil heavy metal and PAH contamination could act as a source for groundwater contamination.	Groundwater is not used on Area B. Therefore it is considered there is no significant direct exposure to the groundwater by users of the site. Groundwater would eventually discharge to the ocean located approximately 700m from the investigation area or Botany Bay located further west.
Whether the uses to which the land and adjoining land are currently being put are such to increase the risk of harm?	Area B is currently being used for commercial/industrial purposes and hence the current use of the land is considered not to increase the risk of harm. Area B is bounded downslope to the west and upslope to the north by additional portions of the Long Bay Correctional Complex, and downslope to the east and south by residential properties. The current uses of the surrounding land are not likely to increase the risk of harm.	Groundwater is not used on the site and adjacent properties to the south, east and west, and hence the current use of the land is considered not to increase the risk of harm.
Whether the substances have migrated or are likely to migrate from the land?	It is considered that contamination in the fill has a low potential of offsite migration as it is located a significant distance from the site boundary and is predominantly covered by pavement.	It is anticipated likely that significant dilution and attenuation of the hydrocarbon and heavy metal contamination would occur prior to the groundwater discharging offsite.

NSW EPA (1999a) Matters Requiring Consideration	Soil	Groundwater
Any guidelines made or approved by the EPA on contamination and remediation?	Asbestos was identified on the surface of the waste storage area. Potential asbestos was recorded in fill at one location. TPH and BTEX are likely to be present localised in the immediate vicinity of the fuel storage and dispensing at concentrations exceeding the SIL/HIL for commercial / industrial landuse.	Heavy metals were recorded exceeding the ANZECC aquatic trigger levels in the majority of wells TPH C6-C36 was detected at concentrations exceeding the adopted Dutch based investigation level in one well, although it is noted that this is not an EPA endorsed guideline. Benzene was detected exceeding the drinking water guideline in one well.

It is considered that the asbestos contamination at the surface of Area B does not pose a SROH to human health given the low sensitivity landuse (waste storage in a maintenance area), the localised impact and that the area is predominantly covered by pavements.

With respect to potential environmental risks, it is considered that substantial dilution and attenuation of the hydrocarbon and heavy metal contamination would occur prior to the groundwater discharging offsite and the contamination appears to be localised. As such it is considered that the potential migration of contaminated groundwater from Area B would not pose a SROH.

It is important to note that the NSW EPA is the sole arbiter of significant risk of harm and their opinion may differ from Coffey's.

9.2 Area D

An assessment of these matters requiring consideration in the assessment of SROH is presented in Table 12.

TABLE 12: ASSESSMENT OF SROH FROM SOIL AND SHALLOW GROUNDWATER IN AREA D

NSW EPA (1999a) Matters Requiring Consideration	Soil	Groundwater
Whether the contamination has already caused harm?	There is no evidence that the contamination in the fill has already caused harm.	There is no evidence that the groundwater contamination has already caused harm.
Whether the substances are toxic, persistent or bioaccumulative, are present in large quantities or high concentrations or occur in combinations?	TPH and PAHs were detected in soil at concentrations exceeding the SIL/HIL applicable to commercial / industrial landuse in localised areas of the site. Various PAH compounds can be carcinogenic. PAHs are bioaccumulative and persistent. TPH can be toxic at high concentrations depending on its constituents. The heavier fractions are more persistent. TPH and PAHs are present at high concentrations in a fill stockpile at 1m depth. Potential asbestos containing fibro fragments were recorded in stockpiled fill. Asbestos is persistent and carcinogenic.	TPH can be toxic at high concentrations depending on its constituents. The heavier fractions are more persistent. TPH is generally present at moderate concentrations in one well (MW1). Heavy metals are bioaccumulative and toxic depending on their concentrations and the receptors. Nutrients, particularly ammonia, can be toxic at high concentrations.
Whether there are exposure pathways available to the substances?	The majority of the southern and western parts of Area D are grassed. The majority of identified contamination is at greater than 0.5m depth in the fill profile. Some pavements and buildings are located in the centre and northern part of Area D. Soil heavy metal and PAH contamination could potentially act as a source for groundwater contamination.	Groundwater is not used on Area D. Therefore, it is considered there is no significant direct exposure to the groundwater by users of the site. Groundwater would eventually discharge to Botany Bay located to the west and south-west. Registered domestic groundwater bores (possibly used for gardening) are present on properties approximately 500m to the north-west of the site.
Whether the uses to which the land and adjoining land are currently being put are such to increase the risk of harm?	Area D is currently being used for commercial/industrial and recreational purposes. The recreational use of the land could result in increased risk of harm by the site users. Area D is bounded downslope by residential properties and a school. The current uses	Groundwater is not used on the site or adjoining land. The current use of the land and adjoining land is considered not to increase the risk of harm.

NSW EPA (1999a) Matters Requiring Consideration	Soil	Groundwater
	of the surrounding land are not likely to increase the risk of harm due to their distance from the site.	
Whether the substances have migrated or are likely to migrate from the land?	It is considered that contamination in the fill has a low potential of offsite migration except by leaching and groundwater flow.	Some heavy metal and nutrient concentrations at the downgradient site boundary exceeded the ANZECC (2000) trigger levels. Contaminant concentrations at the downgradient boundary generally do not exceed drinking water guidelines
Any guidelines made or approved by the EPA on contamination and remediation?	TPH and PAH were recorded concentrations exceeding the SIL/HIL for commercial / industrial landuse in localised locations in the fill stockpiles and in subsurface fill across Area D.	See discussion in Section 8.2.5.

It is considered that the contamination in the fill would not pose a SROH to human health given the low sensitivity landuse (commercial/industrial and open space) and the localised nature of the identified contamination.

It is considered that the heavy metals and nutrients would not pose a SROH to the health of potential downgradient groundwater users (such as the domestic registered bores located approximately 500m to the north-west of the site, as the concentrations in groundwater were generally below the drinking water guidelines at the downgradient site boundary.

With respect to potential environmental risks, it is considered that substantial dilution and attenuation of the contamination in the groundwater would occur prior to groundwater discharging to the nearest surface water body and hence the groundwater would not pose a SROH to the environment.

It is important to note that the NSW EPA is the sole arbiter of significant risk of harm and their opinion may differ from Coffey's.

10. CONCLUSIONS AND RECOMMENDATIONS

Based on the investigations undertaken to date, it is considered that for Areas B and D to be suitable with respect to contamination for the proposed developments, remediation, management or further assessment is required to address the issues listed in Tables 13 and 14 respectively.

Tables 13 and 14 also list potential options to address these issues. It is notes that the options presented are not exhaustive and other options may be available. For some contamination issues, for instance the USTs at Area B, there is a clear preferred remedial strategy and therefore only one option has been presented. We would be pleased to discuss these options further if requested.

Once the remedial / management strategies have been selected, it is recommended that a remedial action plan (RAP) be prepared detailing remediation and validation procedures for Areas A and B.

We further recommend that an asbestos management plan be prepared for the construction works to manage the potential for asbestos containing material to be encountered.

Any soil requiring offsite disposal would need to be classified in accordance with the NSW EPA (1999) *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes.*

Based on the available information, it has been assessed that contamination at the site would not pose a significant risk of harm to human health or the environment as defined in the NSW 1997 Contaminated Land Management Act. It is noted that the EPA is the sole arbiter of significant risk and their opinion may differ from that of Coffey.

TABLE 13: ISSUES REQUIRING REMEDIATION / MANAGEMENT OR FURTHER ASSESSMENT, AREA B

Issue Requiring Remediation / Management or Further Assessment	Potential Options
1. Underground Storage Tanks, associated pipe-work and associated contaminated soil and groundwater	• Removal of the USTs and associated pipe-work, excavation and offsite disposal or onsite bioremediation of associated contaminated soils / sandstone followed by validation of the groundwater and assessment of the need for further groundwater remediation or monitoring. • Further assessment of the groundwater could also potentially be brought forward to be undertaken prior to removal of the USTs.
2. Petroleum contamination in the maintenance areas including at location CBH29 and potentially beneath the maintenance buildings and surrounds	• Validation of soil beneath the maintenance workshop area buildings and surrounding areas following removal of the slabs and then remediation of any hydrocarbon contamination identified most likely by excavation and offsite disposal or onsite bioremediation. Location CBH29 will also require opening up and any hydrocarbon contamination chased out.
3. The presence of fibre cement sheeting fragments containing asbestos and other waste in the waste storage compound	• Clearing of all rubbish material and asbestos containing materials and disposal to a licensed landfill. Depending on validation results removal of some surface soil in this area may also be required.
4. Potential for contamination in soils beneath buildings & concrete & bitumen surfacing	• Inspection / validation following removal of buildings and concrete or bitumen pavement to check that conditions of underlying soils are as expected. Remediation of any contaminated hotspots identified.
5. Potential for asbestos containing materials to be present in fill (noting that to date only one fragment of fibre cement sheeting was identified in the fill and it was not tested for asbestos)	• Undertake further validation of the fill material prior to or during the development and then assess remedial requirements (if any). • Excavation and offsite disposal of fill material. • Capping and containing the fill material on site using the building slabs in building footprints and either pavement or a soil layer (minimum 0.5m thick) in other areas. Note that a long term management and maintenance plan would need to be implemented to ensure the integrity of the cap and that any works undertaken beneath the cap are undertaken using appropriate health and safety and environmental controls. Capping of the site would be subject to Council approval. • Implementing a long term asbestos management plan without capping the area which may include controls on sub-surface work and periodic inspections by a qualified consultant to check that no asbestos materials have come to the surface. Again this would be subject to Council approval. Initially the surface of the site would need to be validated for asbestos. • A combination of the above options could also be adopted. For example, fill could be stripped from parts of Area B rendering those areas clean and not requiring ongoing management while other parts of Area B could be capped. The stripped fill could either be disposed of offsite, validated as clean or capped in another part of Area B.

TABLE 14: ISSUES REQUIRING REMEDIATION / MANAGEMENT OR FURTHER ASSESSMENT, AREA D

Issue Requiring Remediation / Management or Further Assessment	Potential Options
1. PAH and potentially asbestos contamination within the sound bunds	• Excavate material and dispose offsite to an appropriately licensed landfill. • Undertake further assessment of the extent of contamination within the sound bunds and then decide remedial strategy. • Manage along with the reminder of the fill material in Area D as per row 2 of this table.
2. Potential contamination within the fill material, given the age, the uncontrolled nature of the dumping and the amount of anthropogenic material (although it is noted that testing of the fill did not generally indicate significant contamination)	• Excavate fill material and dispose offsite to an appropriately licensed landfill. • Capping and containing the fill material on site,. Note that a long term management and maintenance plan would need to be implemented to ensure the integrity of the cap and that any works undertaken beneath the cap are undertaken using appropriate health and safety and environmental controls. Capping of the site would be subject to Council approval. At this stage, it is considered that the building slabs in the building footprints would serve as an adequate cap while the cap in other areas could be either formed by pavement or a layer of soil (say 0.5m thick). • A combination of the above options could also be adopted. For example, fill could be stripped from certain parts of Area D rendering those areas clean and not requiring ongoing management while the remainder of Area D could be capped. The stripped fill could either be disposed of offsite or capped in another part of Area D.
3. Potential for natural soils below groundwater table to be acid sulphate soils	• Once the details of the proposed development, including proposed modification to the groundwater level and soils below the groundwater level that will be disturbed, are known, further specific ASS testing could be undertaken targeting the materials that may be disturbed can be undertaken. If it is assessed that ASS may be disturbed by the development than an acid sulphate soil management plan could be prepared. • Alternatively it could be assumed that the natural soils are potential acid sulphate and a management plan can be prepared accordingly

11. LIMITATIONS

The findings contained within this report are the result of discrete/specific sampling methodologies used in accordance with normal practices. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

Due to the large amount of fill on the site, the possibility of as yet unidentified contamination being present can not be precluded. If during redevelopment of the site, suspicious material (e.g. oily or odorous material, drums, tanks, metal or plastic chemical containers, fibrous material or brightly coloured material etc) or point sources of contamination such as underground storage tanks (USTs) are encountered, work in that part of the site should cease and advice should be sought from a suitably qualified environmental consultant..

The EPA is the sole arbiter of significant risk of harm and their opinion may differ from that of Coffey.

12. REFERENCES

ASSMAC (1998). *Acid Sulfate Soil Manual*. August 1998.

Coffey Geosciences (2003). *Stage 1 - Preliminary Environmental Site Assessment, Long Bay Correctional Complex Malabar* (ref: E12723/1-AF dated 10 April 2003).

Coffey Geosciences (2004). *Sampling and Analysis Plan Areas 'B' and 'D', Long Bay Correctional Complex Malabar* (ref: E12723/3-AJ dated 27 September 2004).

Coffey Geosciences (2005a). *First Phase of Stage 2 Environmental Site Assessment Areas 'B' and 'D', Long Bay Correctional Complex Redevelopment* (ref: E12723/3-AS dated 28 February 2005).

Coffey Geosciences (2005b). *Sampling and Analysis Plan Areas B and D, Long Bay Correctional Complex Malabar* (ref: E12723/4-AF dated 3 March 2005).

NSW EPA (1994). *Contaminated Sites: Guidelines for Assessing Service Station Sites*. New South Wales Environment Protection Authority. December 1994.

NSW EPA (1998). *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme*. New South Wales Environment Protection Authority. June 1998.

NSW EPA (1999). *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes*. New South Wales Environment Protection Authority. May 1999.

NSW EPA (1997). *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. New South Wales Environment Protection Authority. November 1997.

NSW EPA (1995). *Contaminated Sites: Sampling Design Guidelines for Contaminated Sites*. New South Wales Environment Protection Authority. September 1995.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD

JOSHUA LASKY
Senior Environmental Engineer

STRIDER DUERINCKX
Environmental Geologist

Information

Important information about your **Coffey** Environmental Site Assessment

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your environmental site assessment report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental effects of an on-going operation.
- To provide due diligence on behalf of a property vendor.
- To provide due diligence on behalf of a property purchaser.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may alter the sites environmental, geological or hydrological condition.

For each purpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site use) and physical (for example, potential health risks to users of the site or the general public).

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment or on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due diligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.

Coffey Geosciences Pty Ltd ABN 057 056 335 516

Important information about your **Coffey** Environmental Site Assessment

Coffey

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, laboratory data, drawings etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use. It is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or maintenance, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

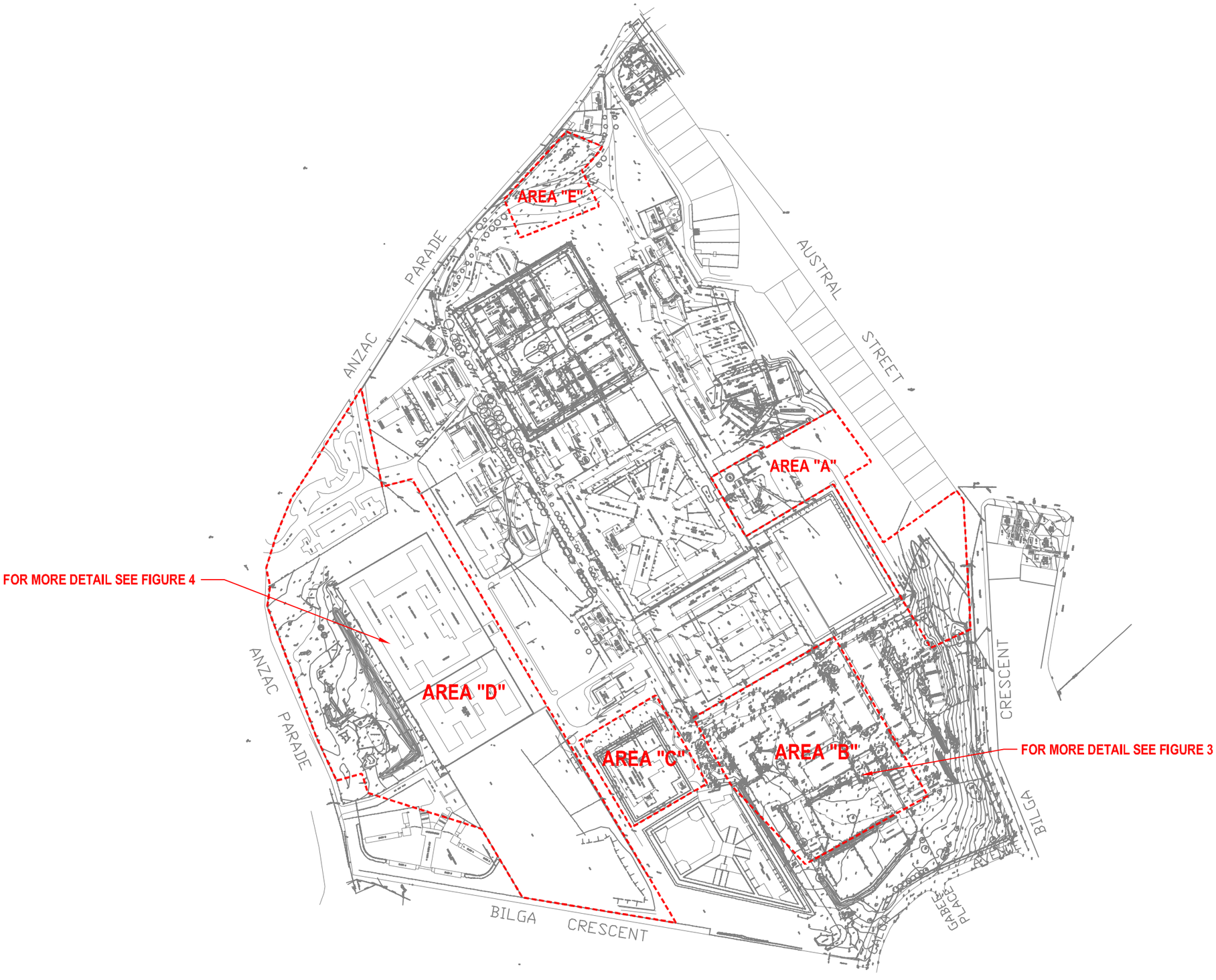
Responsibility

Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

20251 / 07-01

FIGURES

Coffey Geosciences Pty Ltd ACN 056 335 516		Geotechnical **I Resources I** Environmental **I Technical I** Project Management	
Drawn	SD/SW	DEPARTMENT OF PUBLIC WORKS & SERVICES STAGE 2 ENVIRONMENTAL SITE ASSESSMMENT LONG BAY CORRECTIONAL CENTRE	FIGURE 1
Approved	JML		
Date	5/8/05		
Scale	1:20,000	SITE LOCATION PLAN	Job no: E12723/4-AW



Coffey

Coffey Geosciences Pty Ltd ACN 056 335 516

Geotechnical | **Resources** | Environmental | **Technical** | Project Management

40 0 200

Scale (metres)

Revision	Description	Drawn	Approved	Date

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:4000

DEPARTMENT OF PUBLIC WORKS & SERVICES
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
SITE LAYOUT PLAN

FIGURE 2

Job no: **E12723/4-AW**

ADDITIONAL UST FILL POINTS (AEC B1)

UST & BOWSER AREA (AEC B1)

AREA "B" BOUNDARY

MAINTENANCE WORKSHOP (AEC B3/B4)

BULKY GOODS STORAGE

ARCHIVE STORAGE

PERSONAL ITEMS STORAGE

FORMER PLANT NURSERY (AEC B2)

DRY PRODUCT STORAGE BAYS

TEMPORARY INTERNAL WASTE STORAGE AREA (AEC B5)

CRESCENT

CALGA AVENUE

BLDG 4

BH72/MW6 CBH64 CBH59 MW7 CBH60 CBH62 CBH58 CBH80 HA23 CBH73/MW8 CBH31 CBH63 CBH79 CBH32 CBH122 CBH74/MW9 MW10 HA22 CBH29 HA24 CBH75 CBH61 CBH76 CBH82 CBH123 CBH77 CBH8 CBH84 CBH83 CBH28 CBH25 HA29 CBH86 CBH27 CBH30 CBH85 CBH94 CBH87 CBH88 CBH89 CBH92 CBH26 HA26 HA25 CBH90 CBH71 CBH91 CBH93 HA28 HA27

LEGEND

PROPOSED INVESTIGATIONS

- HAND AUGER
- ENVIRONMENTAL BOREHOLE
- GROUNDWATER & SOIL BORE
- STAND ALONE GROUNDWATER WELL
- ENVIRONMENTAL & GEOTECHNICAL BOREHOLE
- AREA B OUTLINE & APPROXIMATE OUTLINE OF PROPOSED LONG BAY HOSPITAL
- PROPOSED LANDUSE - COMMERCIAL / INDUSTRIAL

Coffey

Coffey Geosciences Pty Ltd ACN 056 335 516

Geotechnical | **Resources** | Environmental | **Technical** | Project Management

10 0 50

Scale (metres)

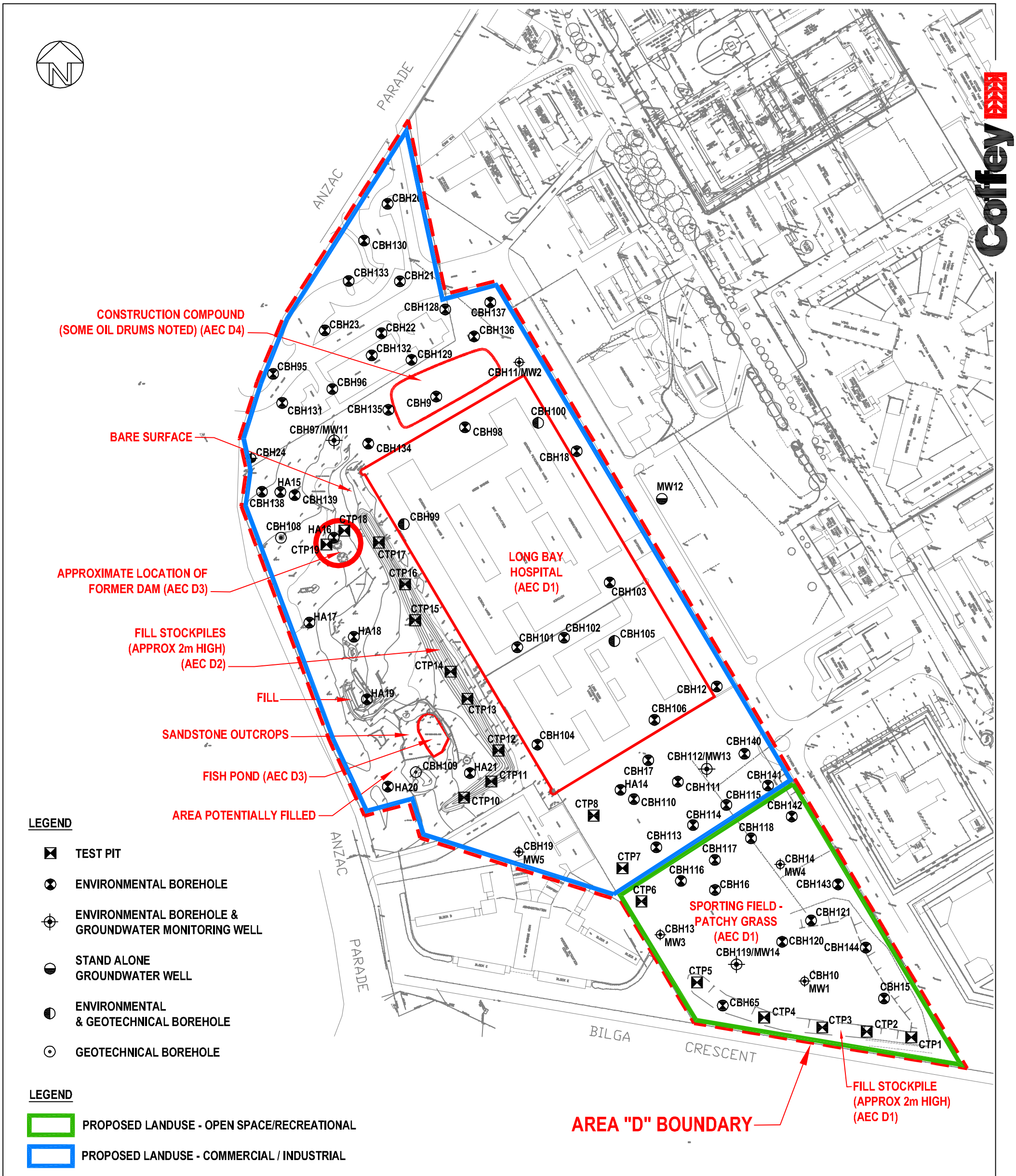
Revision	Description	Drawn	Approved	Date

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:1000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "B" INVESTIGATION LOCATIONS

FIGURE 3

Job no: **E12723/4-AW**



NOTE: PRELIMINARY PLAN OF PROPOSED INVESTIGATION LOCATIONS.
BOREHOLE / TEST PIT NUMBERS AND LOCATIONS MAY BE ALTERED
DEPENDING ON SITE CONDITIONS AND CLIENT / PROPONENT REQUIREMENTS.

20 0 100
Scale (metres)

Coffey Geosciences Pty Ltd ACN 056 335 516 | Geotechnical | **Resources** | Environmental | **Technical** | Project Management

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:2000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "D" INVESTIGATION LOCATIONS

FIGURE 4

Job no: **E12723/4-AW**

ADDITIONAL UST FILL POINTS (AEC B1)

UST & BOWSER AREA (AEC B1)

AREA "B" BOUNDARY

MAINTENANCE/WORKSHOP (AEC B3/B4)

INTERPRETED FLOW OF GROUNDWATER DIRECTION

BULKY GOODS STORAGE

ARCHIVE STORAGE

PERSONAL ITEMS STORAGE

FORMER PLANT NURSERY (AEC B2)

DRY PRODUCT STORAGE BAYS

TEMPORARY INTERNAL WASTE STORAGE AREA (AEC B5)

CRESCENT

CALGA AVENUE

BILGA

CBH72/MW6 CBH59 MW7 CBH64 CBH58 CBH60 CBH62 CBH80 HA23 CBH73/MW8 CBH31 CBH63 CBH79 CBH32 CBH122 CBH74/MW9 MW10 HA22 CBH29 HA24 CBH75 CBH61 CBH76 CBH82 CBH123 CBH77 CBH8 CBH84 CBH83 CBH28 CBH25 HA29 CBH86 CBH27 CBH30 CBH85 CBH94 CBH87 CBH88 CBH89 CBH92 CBH26 HA26 HA25 CBH90 CBH71 CBH91 CBH93 HA28 HA27

LEGEND

PROPOSED INVESTIGATIONS

- HAND AUGER
- ENVIRONMENTAL BOREHOLE
- GROUNDWATER & SOIL BORE
- STAND ALONE GROUNDWATER WELL
- ENVIRONMENTAL & GEOTECHNICAL BOREHOLE
- AREA B OUTLINE & APPROXIMATE OUTLINE OF PROPOSED LONG BAY HOSPITAL
- PROPOSED LANDUSE - COMMERCIAL / INDUSTRIAL
- GROUNDWATER CONTOUR

Coffey

Coffey Geosciences Pty Ltd ACN 056 335 516

Geotechnical | **Resources** | Environmental | **Technical** | Project Management

10 0 50

Scale (metres)

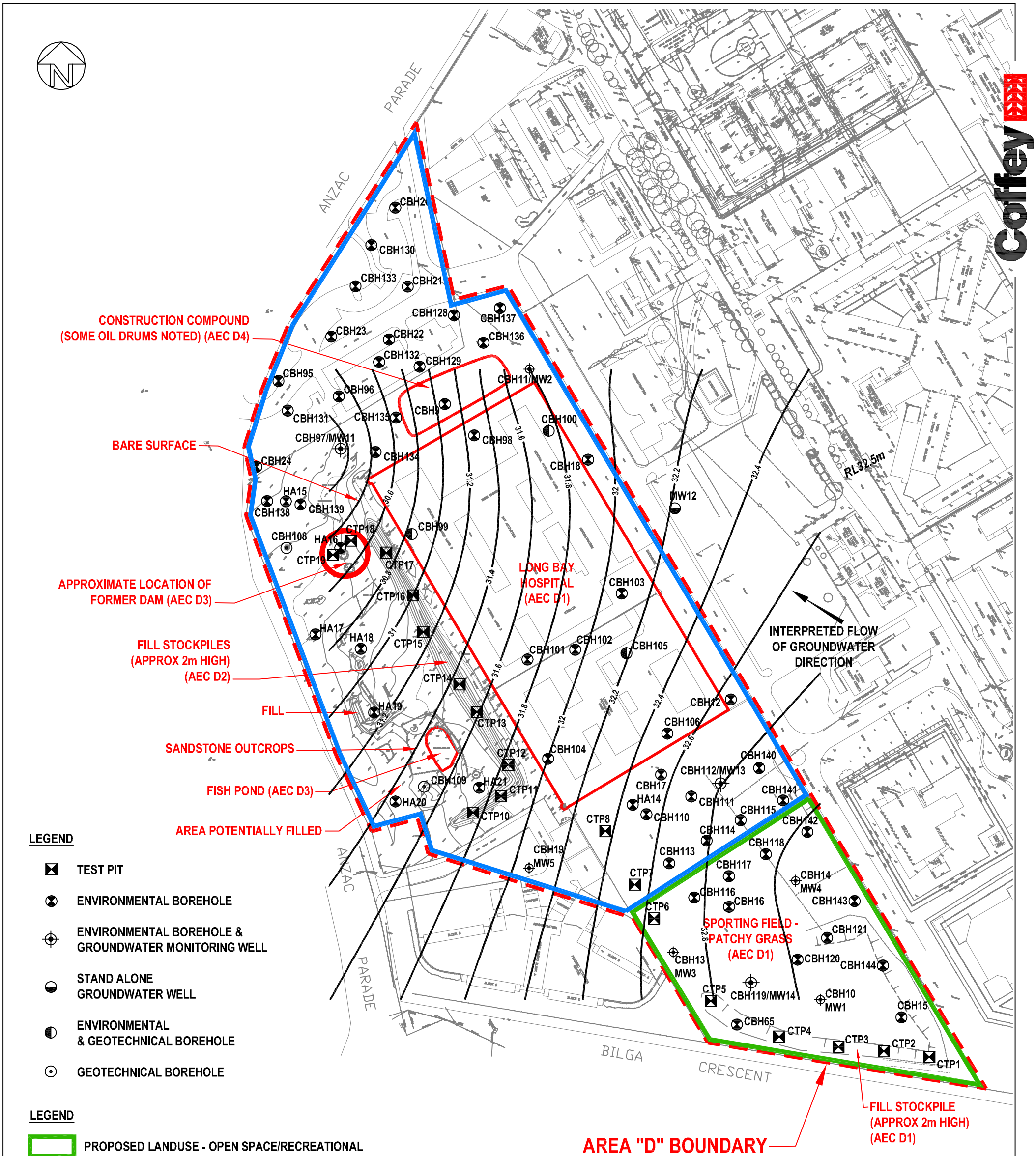
Revision	Description	Drawn	Approved	Date

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:1000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "B" GROUNDWATER CONTOURS

FIGURE 5

Job no: **E12723/4-AW**



NOTE: PRELIMINARY PLAN OF PROPOSED INVESTIGATION LOCATIONS.
BOREHOLE / TEST PIT NUMBERS AND LOCATIONS MAY BE ALTERED
DEPENDING ON SITE CONDITIONS AND CLIENT / PROPONENT REQUIREMENTS.

Coffey Geosciences Pty Ltd ACN 056 335 516		Geotechnical | **Resources** | Environmental | **Technical** | Project Management	
Drawn	SD/SW	DEPARTMENT OF COMMERCE STAGE 2 ENVIRONMENTAL SITE ASSESSMENT LONG BAY CORRECTIONAL CENTRE AREA "D" GROUNDWATER CONTOURS	**FIGURE 6**
Approved	JML		
Date	5/8/05		Job no: **E12723/4-AW**
Scale	1:2000		

ADDITIONAL UST FILL POINTS (AEC B1)

UST & BOWSER AREA (AEC B1)

POTENTIAL ASBESTOS CONTAINING MATERIAL (0.6m DEPTH)

AREA "B" BOUNDARY

MAINTENANCE WORKSHOP (AEC B3/B4)

BULKY GOODS STORAGE

ARCHIVE STORAGE

PERSONAL ITEMS STORAGE

FORMER PLANT NURSERY (AEC B2)

DRY PRODUCT STORAGE BAYS

TEMPORARY INTERNAL WASTE STORAGE AREA (AEC B5)

CRESCENT

CALGA AVENUE

BILGA

CBH61	BaP
0.8-0.9	2.2

CBH76	BaP
0.1-0.8	3.6

CBH87	BaP
0-0.3	3.2

	ASBESTOS
ASBESTOS 1	Y
ASBESTOS 2	Y
ASBESTOS 3	Y

HA25	BaP	TOTAL PAH
0-0.1	3.8	47

LEGEND

PROPOSED INVESTIGATIONS

- HAND AUGER
- ENVIRONMENTAL BOREHOLE
- GROUNDWATER & SOIL BORE
- STAND ALONE GROUNDWATER WELL
- ENVIRONMENTAL & GEOTECHNICAL BOREHOLE
- AREA B OUTLINE & APPROXIMATE OUTLINE OF PROPOSED LONG BAY HOSPITAL
- PROPOSED LANDUSE - COMMERCIAL / INDUSTRIAL

SAMPLE ID	ANALYTE	ANALYTE
SAMPLE DEPTH	CONC (mg/kg) EXCEEDS OPEN SPACE GUIDELINE	CONC (mg/kg) EXCEEDS COM/IND GUIDELINE

Coffey

Coffey Geosciences Pty Ltd ACN 056 335 516 | Geotechnical | **Resources** | Environmental | **Technical** | Project Management

10 0 50

Scale (metres)

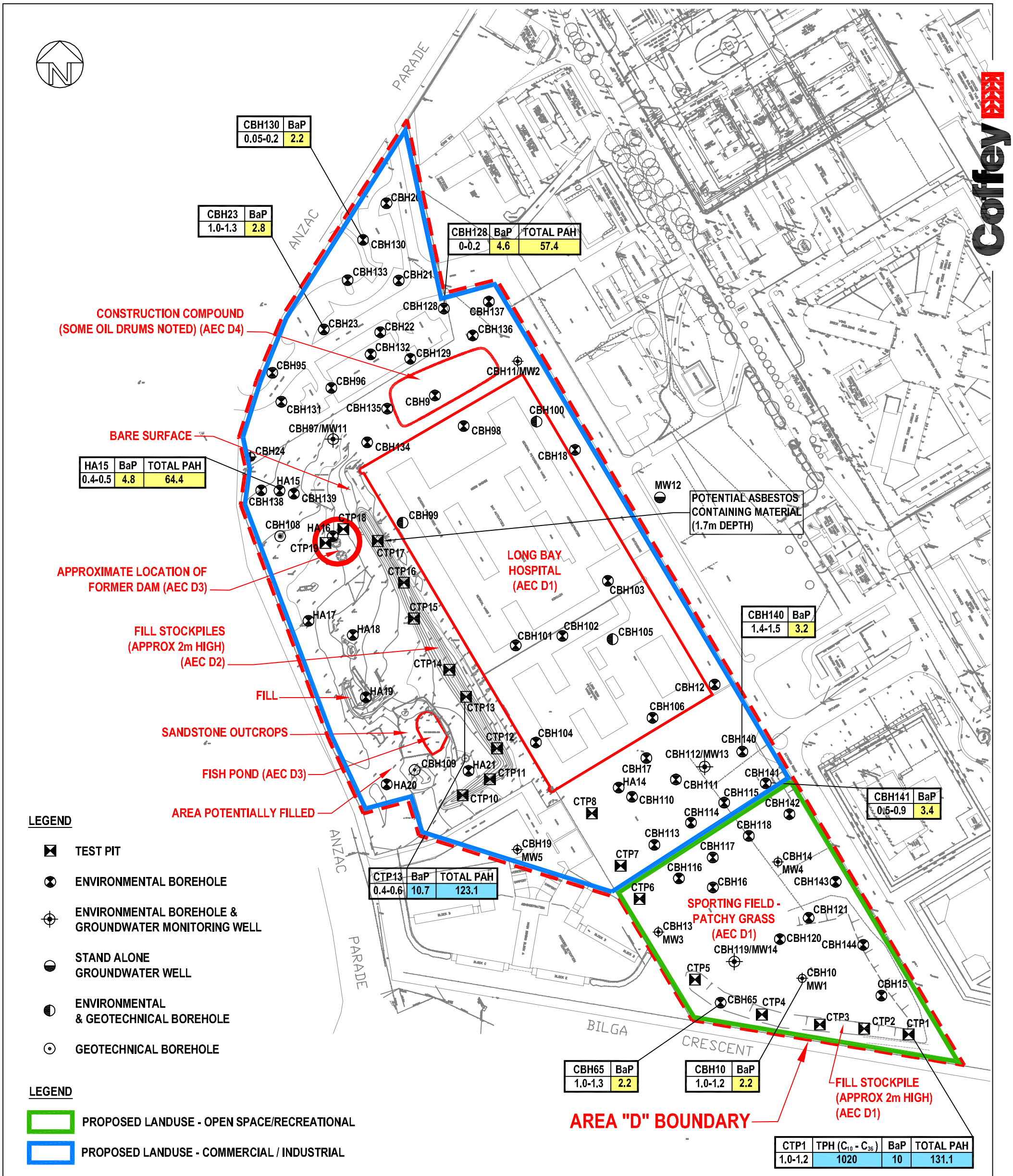
Revision	Description	Drawn	Approved	Date

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:1000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "B" SOIL EXCEEDANCES

FIGURE 7

Job no: **E12723/4-AW**



NOTE: PRELIMINARY PLAN OF PROPOSED INVESTIGATION LOCATIONS.
BOREHOLE / TEST PIT NUMBERS AND LOCATIONS MAY BE ALTERED
DEPENDING ON SITE CONDITIONS AND CLIENT / PROPONENT REQUIREMENTS.

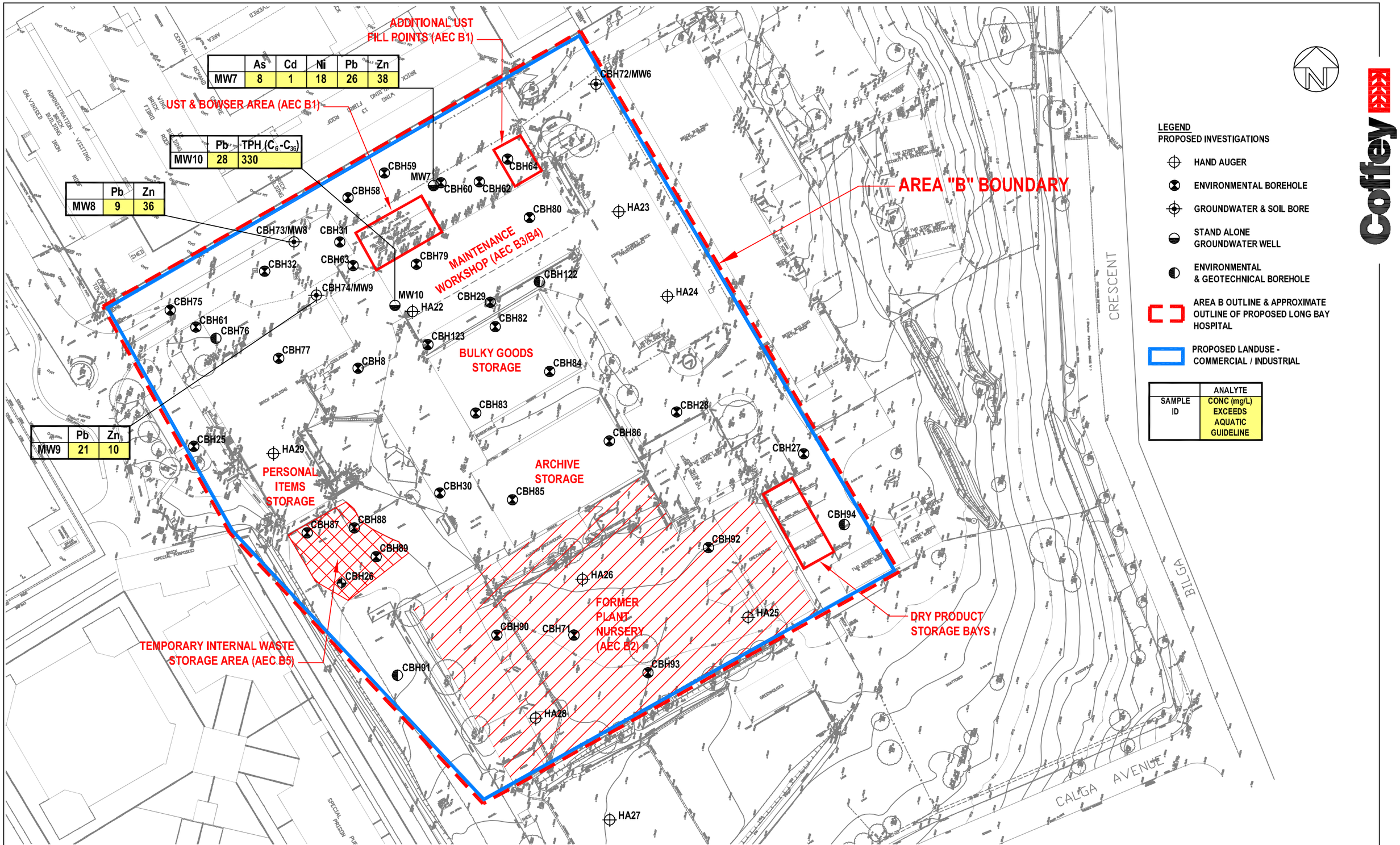
Coffey Geosciences Pty Ltd ACN 056 335 516 | Geotechnical | **Resources** | Environmental | **Technical** | Project Management

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:2000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "D" SOIL EXCEEDANCES

FIGURE 8

Job no: **E12723/4-AW**



	As	Cd	Ni	Pb	Zn
MW7	8	1	18	26	38

	Pb	TPH (C_6-C_{36})
MW10	28	330

	Pb	Zn
MW8	9	36

	Pb	Zn
MW9	21	10

Coffey

Coffey Geosciences Pty Ltd ACN 056 335 516 | Geotechnical | **Resources** | Environmental | **Technical** | Project Management

10 0 50
Scale (metres)

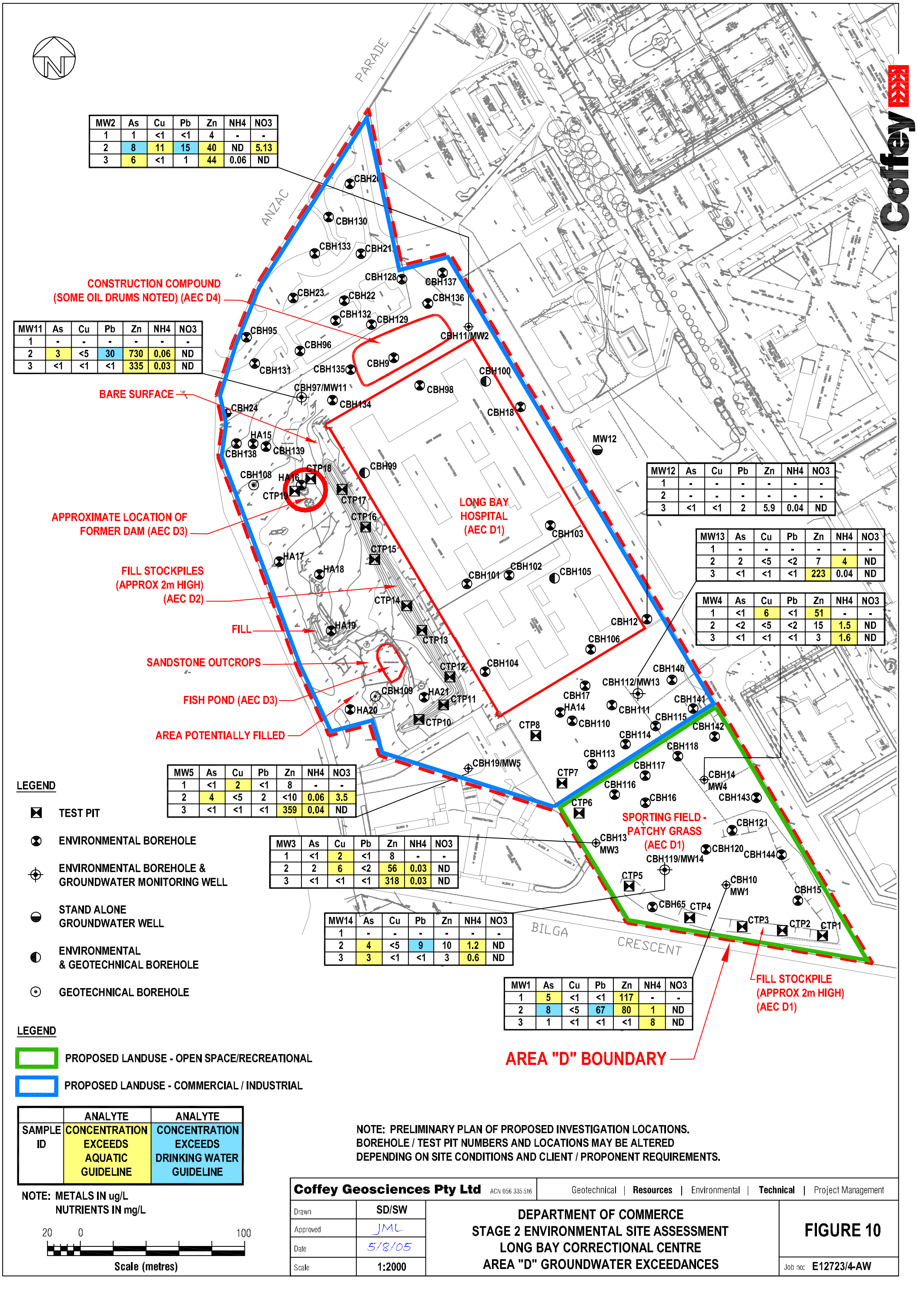
Revision	Description	Drawn	Approved	Date

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:1000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "B" GROUNDWATER EXCEEDANCES

FIGURE 9

Job no: **E12723/4-AW**



MW2	As	Cu	Pb	Zn	NH4	NO3
1	1	<1	<1	4	-	-
2	8	11	15	40	ND	5.13
3	6	<1	1	44	0.06	ND

MW11	As	Cu	Pb	Zn	NH4	NO3
1	-	-	-	-	-	-
2	3	<5	30	730	0.06	ND
3	<1	<1	<1	335	0.03	ND

MW12	As	Cu	Pb	Zn	NH4	NO3
1	-	-	-	-	-	-
2	-	-	-	-	-	-
3	<1	<1	2	5.9	0.04	ND

MW13	As	Cu	Pb	Zn	NH4	NO3
1	-	-	-	-	-	-
2	2	<5	<2	7	4	ND
3	<1	<1	<1	223	0.04	ND

MW4	As	Cu	Pb	Zn	NH4	NO3
1	<1	6	<1	51	-	-
2	<2	<5	<2	15	1.5	ND
3	<1	<1	<1	3	1.6	ND

MW5	As	Cu	Pb	Zn	NH4	NO3
1	<1	2	<1	8	-	-
2	4	<5	2	<10	0.06	3.5
3	<1	<1	<1	359	0.04	ND

MW3	As	Cu	Pb	Zn	NH4	NO3
1	<1	2	<1	8	-	-
2	2	6	<2	56	0.03	ND
3	<1	<1	<1	318	0.03	ND

MW14	As	Cu	Pb	Zn	NH4	NO3
1	-	-	-	-	-	-
2	4	<5	9	10	1.2	ND
3	3	<1	<1	3	0.6	ND

MW1	As	Cu	Pb	Zn	NH4	NO3
1	5	<1	<1	117	-	-
2	8	<5	67	80	1	ND
3	1	<1	<1	<1	8	ND

LEGEND

- TEST PIT
- ENVIRONMENTAL BOREHOLE
- ENVIRONMENTAL BOREHOLE & GROUNDWATER MONITORING WELL
- STAND ALONE GROUNDWATER WELL
- ENVIRONMENTAL & GEOTECHNICAL BOREHOLE
- GEOTECHNICAL BOREHOLE

LEGEND

- PROPOSED LANDUSE - OPEN SPACE/RECREATIONAL
- PROPOSED LANDUSE - COMMERCIAL / INDUSTRIAL

SAMPLE ID	ANALYTE CONCENTRATION EXCEEDS AQUATIC GUIDELINE	ANALYTE CONCENTRATION EXCEEDS DRINKING WATER GUIDELINE

NOTE: METALS IN ug/L
NUTRIENTS IN mg/L

20 0 100
Scale (metres)

NOTE: PRELIMINARY PLAN OF PROPOSED INVESTIGATION LOCATIONS. BOREHOLE / TEST PIT NUMBERS AND LOCATIONS MAY BE ALTERED DEPENDING ON SITE CONDITIONS AND CLIENT / PROPONENT REQUIREMENTS.

Coffey Geosciences Pty Ltd ACN 056 335 516 | Geotechnical | **Resources** | Environmental | **Technical** | Project Management

Drawn	SD/SW
Approved	JML
Date	5/8/05
Scale	1:2000

DEPARTMENT OF COMMERCE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
LONG BAY CORRECTIONAL CENTRE
AREA "D" GROUNDWATER EXCEEDANCES

FIGURE 10

Job no: E12723/4-AW

LABORATORY RESULTS TABLES

E12723/4 - AW
05/08/2005

TABLE LR1
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID				CBH8	CBH8	CBH25	CBH26	CBH27	CBH28	CBH28	CBH29
Geological Origin	THRESHOLD			Sandy Gravel	Sand	Fill	Fill	Fill	Fill	Silty Clay	Fill
Date of Sampling	CONCENTRATION			25-Oct-04	25-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	0.2-0.3	2.5-2.7	0.0-0.1	0.0-0.1	0.15-0.25	0.15-0.25	3.45-3.5	0.2-0.3
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	15	<5	<5	<5	7	<5	8	8
Copper	100 [3]	2000 [1]	5000 [2]	39	<5	12	5	6	8	<5	5
Nickel	60 [3]	600 [1]	3000 [2]	19	<2	12	3	9	<2	<2	4
Lead	600 [3]	600 [1]	1500 [2]	12	<5	20	<5	14	110	69	41
Zinc	200 [3]	14000 [1]	35000 [2]	50	38	89	43	57	92	29	74
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	ND	ND	ND	ND	ND
BTEX											
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
Pyrene				0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4
Benzo(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(123-cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAHs		40 [1]	100 [2]	2.4	ND	ND	ND	ND	ND	ND	4.4
VOLATILE ORGANIC COMPOUNDS				-	ND	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES				-	-	ND	ND	-	ND	-	-
ORGANOPHOSPHORUS PESTICIDES				-	-	ND	ND	-	ND	-	-
ASBESTOS		ND [5]	ND [5]	-	-	ND	ND	-	ND	-	-

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) A
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) A
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (19
Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- Not Analysed

Concentration exceeds phytotoxicity based threshold cc
Concentration exceeds the commercial based threshol
Concentration exceeds the Open Space based thresho
Based on the Health Based Soil Investigation Level in C
Based on the Health Based Soil Investigation Level in C
Based on the Phytotoxicity Based Soil Investigation Lev
Auditor Guidelines
Based on NSW EPA (1994) Guidelines for Assessing S
NSW EPA advice is that there should be no asbestos in
Not Detected
Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR1
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR S
AREA B
All results in mg/kg

Sample ID				CBH29	CBH30	CBH30	CBH31	CBH32	CBH32	CBH58	CBH61
Geological Origin	THRESHOLD			Sand	Fill	Sand	Fill	Fill	Clayey Sand	Sand	Fill
Date of Sampling	CONCENTRATION			28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	28-Oct-04	1-Nov-04	1-Nov-04
Depth (m)	Phytotox	Open Space	Commercial	1.0-1.3	0.15-0.25	1.0-1.3	0.2-0.3	0.0-0.1	1.0-1.2	0.2-0.3	0.0-0.1
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	7	9	<5	<5	<5	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	17	<5	<5	<5	<5	<5	<5
Nickel	60 [3]	600 [1]	3000 [2]	<2	14	<2	<2	3	<2	3	<2
Lead	600 [3]	600 [1]	1500 [2]	<5	21	14	<5	6	<5	<5	11
Zinc	200 [3]	14000 [1]	35000 [2]	32	66	43	26	37	23	19	54
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	50	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	50	ND	ND	ND	ND	ND	ND
BTEX											
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	0.6	0.9	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene				<0.5	0.7	1	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene				<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(123-cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAHs		40 [1]	100 [2]	ND	2	4.2	ND	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS				ND	-	-	-	-	ND	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	ND	ND
ORGANOPHOSPHORUS PESTICIDES				-	-	-	-	-	-	ND	ND
ASBESTOS		ND [5]	ND [5]	-	-	-	-	-	-	-	ND

	oncentration	Concentration exceeds phytotoxicity based threshold concentration	Concentration exc
	d concentration	Concentration exceeds the commercial based threshold concentration	Concentration exc
	old concentration	Concentration exceeds the Open Space based threshold concentration	Concentration exc
1	Column 3 of the NSW EPA (1998) A	Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) A	Based on the Hea
2	Column 4 of the NSW EPA (1998) A	Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) A	Based on the Hea
3	vel in Column 5 of the NSW EPA (19	Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (19	Based on the Phyt
		Auditor Guidelines	Auditor Guidelines
4	Service Station Sites	Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites	Based on NSW EI
5	in surface soil	NSW EPA advice is that there should be no asbestos in surface soil	NSW EPA advice
ND		Not Detected	Not Detected
-		Not Analysed	Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR1
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR S
AREA B
All results in mg/kg

Sample ID				CBH61	CBH62	CBH62	CBH64	CBH71
Geological Origin	THRESHOLD			Sand	Fill	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			1-Nov-04	1-Nov-04	1-Nov-04	1-Nov-04	1-Nov-04
Depth (m)	Phytotox	Open Space	Commercial	0.8-0.9	0.2-0.3	0.3-0.5	0.2-0.4	0.0-0.1
HEAVY METALS								
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	<5	<5	<5	<5	7
Copper	100 [3]	2000 [1]	5000 [2]	8	<5	<5	<5	8
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	<2	<2	6
Lead	600 [3]	600 [1]	1500 [2]	40	<5	<5	<5	12
Zinc	200 [3]	14000 [1]	35000 [2]	38	30	9	6	23
Mercury	1 [3]	30 [1]	75 [2]	0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS								
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10
C15 - C28 Fraction				80	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	80	ND	ND	ND	ND
BTEX								
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				1	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				2.6	<0.5	<0.5	<0.5	1.4
Pyrene				3.2	<0.5	<0.5	<0.5	1.6
Benzo(a)anthracene				1.6	<0.5	<0.5	<0.5	0.9
Chrysene				1.8	<0.5	<0.5	<0.5	1
Benzo(b)&(k)fluoranthene				4	<1	<1	<1	2
Benzo(a)pyrene		2 [1]	5 [2]	2.2	<0.5	<0.5	<0.5	1
Indeno(123-cd)pyrene				1.4	<0.5	<0.5	<0.5	0.8
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				1.4	<0.5	<0.5	<0.5	0.7
Total PAHs		40 [1]	100 [2]	19.2	ND	ND	ND	9.4
VOLATILE ORGANIC COMPOUNDS				-	-	ND	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	ND
ORGANOPHOSPHORUS PESTICIDES				-	-	-	-	ND
ASBESTOS		ND [5]	ND [5]	-	-	ND	-	ND

ceeds phytotoxicity based threshold concentration	Concentration exceeds phytotoxicity based threshold concentratic
ceeds the commercial based threshold concentration	Concentration exceeds the commercial based threshold concentr
eeds the Open Space based threshold concentration	Concentration exceeds the Open Space based threshold concent
1alth Based Soil Investigation Level in Column 3 of the NSW EPA (1998) A	Based on the Health Based Soil Investigation Level in Column 3 c
2alth Based Soil Investigation Level in Column 4 of the NSW EPA (1998) A	Based on the Health Based Soil Investigation Level in Column 4 c
3ytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (19	Based on the Phytotoxicity Based Soil Investigation Level in Colu
is	Auditor Guidelines
4:PA (1994) Guidelines for Assessing Service Station Sites	Based on NSW EPA (1994) Guidelines for Assessing Service Sta
5a is that there should be no asbestos in surface soil	NSW EPA advice is that there should be no asbestos in surface s
ND	Not Detected
-	Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR1
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR S
AREA B
All results in mg/kg

Sample ID			
Geological Origin	THRESHOLD		
Date of Sampling	CONCENTRATION		
Depth (m)	Phytotox	Open Space	Commercial
HEAVY METALS			
Arsenic	20 [3]	200 [1]	500 [2]
Cadmium	3 [3]	40 [1]	100 [2]
Chromium - total	400 [3]	24% [1]	60% [2]
Copper	100 [3]	2000 [1]	5000 [2]
Nickel	60 [3]	600 [1]	3000 [2]
Lead	600 [3]	600 [1]	1500 [2]
Zinc	200 [3]	14000 [1]	35000 [2]
Mercury	1 [3]	30 [1]	75 [2]
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction		65 [4]	65 [4]
C10 - C14 Fraction			
C15 - C28 Fraction			
C29 - C36 Fraction			
Total C10-C36		1000 [4]	1000 [4]
BTEX			
Benzene	-	1 [4]	1 [4]
Toluene	1.4 [4]	130 [4]	130 [4]
Ethylbenzene	3.1 [4]	50 [4]	50 [4]
Total Xylene	14 [4]	25 [4]	25 [4]
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene			
Acenaphthylene			
Acenaphthene			
Fluorene			
Phenanthrene			
Anthracene			
Fluoranthene			
Pyrene			
Benzo(a)anthracene			
Chrysene			
Benzo(b)&(k)fluoranthene			
Benzo(a)pyrene		2 [1]	5 [2]
Indeno(123-cd)pyrene			
Dibenz(ah)anthracene			
Benzo(ghi)perylene			
Total PAHs		40 [1]	100 [2]
VOLATILE ORGANIC COMPOUNDS			
ORGANOCHLORINE PESTICIDES			
ORGANOPHOSPHORUS PESTICIDES			
ASBESTOS		ND [5]	ND [5]

[redacted]on
[redacted]ation
[redacted]ration
1 of the NSW EPA (1998)
2 of the NSW EPA (1998)
3 mn 5 of the NSW EPA (
4ation Sites
5soil
ND
-

E12723/4 - AW
05/08/2005

TABLE LR2
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID				CBH9	CBH10MW1	CBH10MW1	CBH11MW2	CBH11MW2	CBH12	CBH13MW3
Geological Origin	THRESHOLD			Fill	Fill	Fill	Fill	Sand	Fill	Fill
Date of Sampling	CONCENTRATION			25-Oct-04	25-Oct-04	25-Oct-04	26-Oct-04	26-Oct-04	26-Oct-04	26-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.1	0.0-0.1	1.0-1.2	0.0-0.1	1.0-1.3	0.0-0.1	0.0-0.1
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	7	11	<5	7	<5	9	<5
Copper	100 [3]	2000 [1]	5000 [2]	13	18	<5	11	11	6	<5
Nickel	60 [3]	600 [1]	3000 [2]	8	6	4	11	6	11	7
Lead	600 [3]	600 [1]	1500 [2]	33	85	11	22	33	17	11
Zinc	200 [3]	14000 [1]	35000 [2]	51	86	26	32	100	30	14
Mercury	1 [3]	30 [1]	75 [2]	0.21	0.18	<0.05	0.06	0.12	0.06	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	10	<10	<10	<10	20
C15 - C28 Fraction				<50	70	140	<50	<50	<50	70
C29 - C36 Fraction				<50	80	70	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	150	220	ND	ND	ND	90
BTEX										
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	2	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	1	4.6	<0.5	<0.5	<0.5	<0.5
Pyrene				<0.5	1.2	5.2	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene				<0.5	0.6	2.4	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	0.6	2.2	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	1	4	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	0.7	2.2	<0.5	<0.5	<0.5	<0.5
Indeno(123-cd)pyrene				<0.5	0.6	1.4	<0.5	<0.5	<0.5	<0.5
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				<0.5	0.5	1.2	<0.5	<0.5	<0.5	<0.5
Total PAHs		40 [1]	100 [2]	ND	6.2	25.8	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	ND	-
ORGANOCHLORINE PESTICIDES				ND	-	-	ND	-	ND	-
ORGANOPHOSPHORUS PESTICIDES				ND	-	-	ND	-	ND	-
ASBESTOS		ND [5]	ND [5]	-	-	-	-	-	ND	-

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR2
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID				CBH14MW4	CBH15	CBH16	CBH17	CBH17	CBH18	CBH18
Geological Origin	THRESHOLD			Fill	Fill	Fill	Fill	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1	1.0-0.3
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	8	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	7	7	12	7	6	8	11
Copper	100 [3]	2000 [1]	5000 [2]	14	14	18	18	20	6	8
Nickel	60 [3]	600 [1]	3000 [2]	10	6	6	3	5	12	22
Lead	600 [3]	600 [1]	1500 [2]	40	56	52	54	64	12	11
Zinc	200 [3]	14000 [1]	35000 [2]	81	95	89	50	110	26	28
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.08	0.12	0.34	<0.05	<0.05	0.06
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	ND	ND	ND	ND
BTEX										
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	2	0.8	<0.5	1.2	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				0.7	2.8	2	0.7	2.6	<0.5	<0.5
Pyrene				0.8	2.8	2.2	0.8	3	<0.5	<0.5
Benzo(a)anthracene				<0.5	1.2	0.9	<0.5	1.2	<0.5	<0.5
Chrysene				<0.5	1.2	1	<0.5	1.2	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	2	2	<1	3	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	1.2	1	<0.5	1.4	<0.5	<0.5
Indeno(123-cd)pyrene				<0.5	0.8	0.8	<0.5	1.2	<0.5	<0.5
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				<0.5	0.7	0.7	<0.5	1	<0.5	<0.5
Total PAHs		40 [1]	100 [2]	1.5	14.7	11.4	1.5	15.8	ND	ND
VOLATILE ORGANIC COMPOUNDS				ND	-	ND	ND	-	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	ND	-	ND	-
ORGANOPHOSPHORUS PESTICIDES				-	-	-	ND	-	ND	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	ND	-	-	ND

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space or commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR2
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID				CBH19MW5	CBH19MW5	CBH20	CBH21	CBH22	CBH22	CBH23
Geological Origin	THRESHOLD			Fill	Fill	Sand	Fill	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04	27-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.1	4.0-4.3	1.0-1.3	0.0-0.1	0.0-0.1	1.0-1.3	0.0-0.1
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	-
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Chromium - total	400 [3]	24% [1]	60% [2]	38	<5	<5	<5	<5	13	-
Copper	100 [3]	2000 [1]	5000 [2]	17	<5	5	47	31	44	-
Nickel	60 [3]	600 [1]	3000 [2]	38	<2	<2	3	8	13	-
Lead	600 [3]	600 [1]	1500 [2]	14	<5	21	24	24	150	-
Zinc	200 [3]	14000 [1]	35000 [2]	84	6	41	47	40	130	-
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	<0.05	0.38	0.06	-
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	-
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	-
C15 - C28 Fraction				220	<50	<50	<50	50	<50	-
C29 - C36 Fraction				200	<50	<50	<50	90	<50	-
Total C10-C36		1000 [4]	1000 [4]	420	ND	ND	ND	140	ND	-
BTEX										
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Phenanthrene				<0.5	<0.5	<0.5	<0.5	0.6	<0.5	-
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluoranthene				<0.5	<0.5	1	0.7	1.6	<0.5	-
Pyrene				<0.5	<0.5	1	0.8	2	<0.5	-
Benzo(a)anthracene				<0.5	<0.5	<0.5	<0.5	1	<0.5	-
Chrysene				<0.5	<0.5	<0.5	<0.5	0.9	<0.5	-
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	2	<1	-
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	-
Indeno(123-cd)pyrene				<0.5	<0.5	<0.5	<0.5	1.2	<0.5	-
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Benzo(ghi)perylene				<0.5	<0.5	<0.5	<0.5	0.9	<0.5	-
Total PAHs		40 [1]	100 [2]	ND	ND	2	1.5	11.4	ND	-
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHORUS PESTICIDES				-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	-	-	-	-	-	ND

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space or commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR2
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID				CBH23	CBH24	CBH24	CBH65	CBH65	HA14	HA15
Geological Origin	THRESHOLD			Fill	Fill	Fill	Fill	Fill	Fill	Sand
Date of Sampling	CONCENTRATION			27-Oct-04	27-Oct-04	27-Oct-04	2-Nov-04	2-Nov-04	12-Oct-04	12-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1	0.4-0.5
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	6
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	<5	<5	10	<5	<5	<5	10
Copper	100 [3]	2000 [1]	5000 [2]	28	<5	82	13	10	10	15
Nickel	60 [3]	600 [1]	3000 [2]	3	<2	13	3	6	3	4
Lead	600 [3]	600 [1]	1500 [2]	76	6	120	62	58	40	81
Zinc	200 [3]	14000 [1]	35000 [2]	110	24	230	64	92	66	59
Mercury	1 [3]	30 [1]	75 [2]	0.1	<0.05	<0.05	<0.05	<0.05	0.07	0.15
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				200	<50	<50	<50	100	<50	240
C29 - C36 Fraction				140	<50	60	<50	60	<50	140
Total C10-C36		1000 [4]	1000 [4]	340	ND	60	ND	160	ND	380
BTEX										
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				1.8	<0.5	<0.5	0.6	1.2	<0.5	11
Anthracene				0.6	<0.5	<0.5	<0.5	<0.5	<0.5	2.2
Fluoranthene				4.2	<0.5	0.6	1.2	3.6	<0.5	11
Pyrene				4.6	<0.5	0.7	1.2	4.4	<0.5	11
Benzo(a)anthracene				2	<0.5	<0.5	0.5	1.8	<0.5	5
Chrysene				2.2	<0.5	<0.5	0.6	1.6	<0.5	4.4
Benzo(b)&(k)fluoranthene				5	<1	<1	<1	4	<1	7
Benzo(a)pyrene		2 [1]	5 [2]	2.8	<0.5	<0.5	0.5	2.2	<0.5	4.8
Indeno(123-cd)pyrene				2.4	<0.5	<0.5	<0.5	2	<0.5	3.4
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Benzo(ghi)perylene				1.8	<0.5	<0.5	<0.5	1.4	<0.5	3
Total PAHs		40 [1]	100 [2]	27.9	ND	1.3	4.6	22.2	ND	64.4
VOLATILE ORGANIC COMPOUNDS				ND	-	-	-	ND	ND	-
ORGANOCHLORINE PESTICIDES				ND	-	-	ND	-	ND	-
ORGANOPHOSPHORUS PESTICIDES				ND	-	-	ND	-	ND	-
ASBESTOS		ND [5]	ND [5]	-	-	-	-	-	ND	-

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space or commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- Not Analysed

E12723/4 - AW
05/08/2005

TABLE LR2
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID				HA16	HA17	HA18	HA19	HA20	HA21
Geological Origin	THRESHOLD			Sand	Sand	Sand	Sand	Sand	Sand
Date of Sampling	CONCENTRATION			12-Oct-04	12-Oct-04	12-Oct-04	12-Oct-04	12-Oct-04	12-Oct-04
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.1	0.0-0.1	0.0-0.1	0.4-0.5	0.0-0.1	0.0-0.1
HEAVY METALS									
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium - total	400 [3]	24% [1]	60% [2]	5	6	<5	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	20	13	10	6	7	6
Nickel	60 [3]	600 [1]	3000 [2]	6	7	5	3	3	3
Lead	600 [3]	600 [1]	1500 [2]	45	42	37	36	35	35
Zinc	200 [3]	14000 [1]	35000 [2]	66	66	50	49	64	66
Mercury	1 [3]	30 [1]	75 [2]	0.09	0.09	0.09	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS									
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	60	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	60	ND	ND	ND
BTEX									
Benzene	-	1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS									
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	0.5	0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Fluoranthene				0.7	1	0.8	<0.5	<0.5	<0.5
Pyrene				0.8	1.2	1	<0.5	0.5	<0.5
Benzo(a)anthracene				<0.5	0.6	0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	0.6	0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	1	1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	0.5	0.7	0.6	<0.5	<0.5	<0.5
Indeno(123-cd)pyrene				<0.5	0.5	0.5	<0.5	<0.5	<0.5
Dibenz(ah)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene				<0.5	0.5	0.5	<0.5	<0.5	<0.5
Total PAHs		40 [1]	100 [2]	2	6.6	6.4	ND	0.5	ND
VOLATILE ORGANIC COMPOUNDS				ND	-	-	-	-	-
ORGANOCHLORINE PESTICIDES				ND	-	-	-	-	-
ORGANOPHOSPHORUS PESTICIDES				ND	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	-	-

Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the Open Space or commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
ND Not Detected
- *Not Analysed*

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH72	CBH72	CBH73	CBH74	CBH74	CBH75	CBH75
Geological Origin	THRESHOLD			Fill	Sandstone	Fill	Fill	Sandstone	Colluvium	Aeolian
Date of Sampling	CONCENTRATION			15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	11-Mar-05	11-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.2-0.3	0.5-0.7	0.1-0.3	0.15-0.25	0.5-0.7	0.2-0.3	0.6-0.7
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	54	11	37	<5	<5	<5	14
Copper	100 [3]	2000 [1]	5000 [2]	22	5	20	<5	6	12	13
Nickel	60 [3]	600 [1]	3000 [2]	57	12	45	<2	<2	4	19
Lead	600 [3]	600 [1]	1500 [2]	13	<5	6	<5	27	58	25
Zinc	200 [3]	14000 [1]	35000 [2]	50	21	31	<5	45	77	67
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	0.06
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	-	<5	<5	-	<5	<5
C10 - C14 Fraction				<10	-	<10	<10	-	<10	<10
C15 - C28 Fraction				<50	-	<50	<50	-	80	100
C29 - C36 Fraction				<50	-	<50	<50	-	60	70
Total C10-C36		1000 [4]	1000 [4]	ND	-	ND	ND	-	140	170
BTEX										
Benzene		1 [4]	1 [4]	<0.2	-	<0.2	<0.2	-	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	-	<1	<1	-	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	-	<1	<1	-	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	-	<3	<3	-	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Acenaphthylene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Acenaphthene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Fluorene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Phenanthrene				<0.5	-	<0.5	<0.5	-	<0.5	0.7
Anthracene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Fluoranthene				<0.5	-	<0.5	<0.5	-	1.6	2
Pyrene				<0.5	-	<0.5	<0.5	-	1.8	2.2
Benz(a)anthracene				<0.5	-	<0.5	<0.5	-	1	1.4
Chrysene				<0.5	-	<0.5	<0.5	-	1	1.2
Benzo(b)&(k)fluoranthene				<1	-	<1	<1	-	2	3
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	-	<0.5	<0.5	-	1.4	1.6
Indeno(1.2.3.cd)pyrene				<0.5	-	<0.5	<0.5	-	1.2	1.2
Dibenz(a.h)anthracene				<0.5	-	<0.5	<0.5	-	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	-	<0.5	<0.5	-	1	1.2
Total PAH		40 [1]	100 [2]	ND	-	ND	ND	-	11	14.5
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	-	-	-	-	-	-
Naphthalene				-	-	-	-	-	-	-
1.2.4-Trimethylbenze			170 [6]	-	-	-	-	-	-	-
Other VOCs				-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	ND	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed
Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH76	CBH76	CBH77	CBH77	CBH79	CBH79	CBH80
Geological Origin	THRESHOLD			Fill	Colluvium	Fill	Fill	Fill	Sand	Fill
Date of Sampling	CONCENTRATION			11-Mar-05	11-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.2-0.3	0.7-0.85	0.5-0.6	1.0-1.2	0.2-0.3	0.5-0.95	0.2-0.3
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	6	<5	14	<5
Copper	100 [3]	2000 [1]	5000 [2]	10	8	13	8	6	<5	<5
Nickel	60 [3]	600 [1]	3000 [2]	3	<2	4	3	4	<2	3
Lead	600 [3]	600 [1]	1500 [2]	47	25	76	74	6	6	6
Zinc	200 [3]	14000 [1]	35000 [2]	53	27	110	97	56	30	31
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	0.06	0.07	0.07	0.07
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	-	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	-	<10	10	<10
C15 - C28 Fraction				80	140	<50	-	<50	<50	<50
C29 - C36 Fraction				<50	90	<50	-	<50	60	<50
Total C10-C36		1000 [4]	1000 [4]	80	230	ND	-	ND	70	ND
BTEX										
Benzene		1 [4]	1 [4]	<0.2	<0.2	-	-	-	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	-	-	-	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	-	-	-	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	-	-	-	-	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	-	1	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Phenanthrene				1	1.4	<0.5	-	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Fluoranthene				2.2	4.4	<0.5	-	<0.5	<0.5	<0.5
Pyrene				2.6	5.2	<0.5	-	<0.5	<0.5	<0.5
Benz(a)anthracene				1.4	3.2	<0.5	-	<0.5	<0.5	<0.5
Chrysene				1.2	2.8	<0.5	-	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				3	5	<1	-	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	1.6	3.6	<0.5	-	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene				1.4	2.4	<0.5	-	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				1.2	2.2	<0.5	-	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	15.6	30.2	ND	-	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	-	<1	-	<1	<1	<1
Naphthalene				-	-	<1	-	1	<1	<1
1.2.4-Trimethylbenze			170 [6]	-	-	<1	-	2	<1	<1
Other VOCs				-	-	ND	-	ND	ND	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-		-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed
Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH80	CBH82	CBH82	CBH83	CBH83	CBH83	CBH84
Geological Origin	THRESHOLD			Fill	Fill	Sand	Fill	Fill	Sand	Fill
Date of Sampling	CONCENTRATION			16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.5-0.95	0.2-0.3	0.5-0.95	0.2-0.3	0.5-0.95	1.2-1.65	0.2-0.3
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	8	<5	<5	<5	<5	9
Copper	100 [3]	2000 [1]	5000 [2]	<5	<5	<5	9	6	<5	5
Nickel	60 [3]	600 [1]	3000 [2]	<2	5	<2	4	2	<2	5
Lead	600 [3]	600 [1]	1500 [2]	8	5	<5	17	47	<5	7
Zinc	200 [3]	14000 [1]	35000 [2]	39	40	18	49	88	18	40
Mercury	1 [3]	30 [1]	75 [2]	0.06	<0.05	<0.05	0.06	0.06	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	-	<5	<5	-	<5	-	<5
C10 - C14 Fraction				-	<10	<10	-	<10	-	<10
C15 - C28 Fraction				-	<50	<50	-	<50	-	<50
C29 - C36 Fraction				-	<50	<50	-	<50	-	<50
Total C10-C36		1000 [4]	1000 [4]	-	ND	ND	-	ND	-	ND
BTEX										
Benzene		1 [4]	1 [4]	-	-	-	-	-	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	-	-	-	-	-	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	-	-	-	-	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	-	-	-	-	-	-	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				-	<0.5	<0.5	-	<0.5	-	<0.5
Acenaphthylene				-	<0.5	<0.5	-	<0.5	-	<0.5
Acenaphthene				-	<0.5	<0.5	-	<0.5	-	<0.5
Fluorene				-	<0.5	<0.5	-	<0.5	-	<0.5
Phenanthrene				-	<0.5	<0.5	-	<0.5	-	<0.5
Anthracene				-	<0.5	<0.5	-	<0.5	-	<0.5
Fluoranthene				-	<0.5	<0.5	-	<0.5	-	<0.5
Pyrene				-	<0.5	<0.5	-	<0.5	-	<0.5
Benz(a)anthracene				-	<0.5	<0.5	-	<0.5	-	<0.5
Chrysene				-	<0.5	<0.5	-	<0.5	-	<0.5
Benzo(b)&(k)fluoranthene				-	<1	<1	-	<1	-	<1
Benzo(a)pyrene		2 [1]	5 [2]	-	<0.5	<0.5	-	<0.5	-	<0.5
Indeno(1.2.3.cd)pyrene				-	<0.5	<0.5	-	<0.5	-	<0.5
Dibenz(a.h)anthracene				-	<0.5	<0.5	-	<0.5	-	<0.5
Benzo(g.h.i)perylene				-	<0.5	<0.5	-	<0.5	-	<0.5
Total PAH		40 [1]	100 [2]	-	ND	ND	-	ND	-	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	<1	<1	-	<1	-	<1
Naphthalene				-	<1	<1	-	<1		<1
1.2.4-Trimethylbenze			170 [6]	-	<1	<1	-	<1		<1
Other VOCs				-	ND	ND	-	ND	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-		-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	ND	-	-	ND	-	ND

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed

Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH84	CBH85	CBH85	CBH85	CBH86	CBH86	CBH87
Geological Origin	THRESHOLD			Sand	Fill	Fill	Sand	Fill	Sand	Fill
Date of Sampling	CONCENTRATION			16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	10-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.4-0.5	0.15-0.25	0.5-0.6	1.1-1.45	0.2-0.3	0.5-0.95	0.0-0.3
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	5	11	<5	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	18	20	<5	<5	<5	15
Nickel	60 [3]	600 [1]	3000 [2]	<2	7	13	<2	<2	<2	12
Lead	600 [3]	600 [1]	1500 [2]	8	22	24	9	10	<5	22
Zinc	200 [3]	14000 [1]	35000 [2]	32	83	200	25	33	18	88
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.08	0.08	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	200
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	160
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	ND	ND	ND	360
BTEX										
Benzene		1 [4]	1 [4]	-	<0.2	-	-	-	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	-	<1	-	-	-	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	<1	-	-	-	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	-	<3	-	-	-	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				0.7	<0.5	<0.5	<0.5	<0.5	<0.5	3.2
Pyrene				0.9	<0.5	<0.5	<0.5	<0.5	<0.5	3.8
Benz(a)anthracene				0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.4
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6
Benzo(b)&(k)fluoranthene				1	<1	<1	<1	<1	<1	5
Benzo(a)pyrene		2 [1]	5 [2]	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.2
Indeno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.2
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.6
Total PAH		40 [1]	100 [2]	3.6	ND	ND	ND	ND	ND	25.9
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	<1	-	<1	<1	<1	-	<1
Naphthalene				<1	-	<1	<1	<1	-	<1
1.2.4-Trimethylbenze			170 [6]	<1	-	<1	<1	<1	-	<1
Other VOCs				ND	-	ND	ND	ND	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	-	-	-	-	ND

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 *Based on the USEPA Preliminary Remediation Goals for Industrial soil*
ND Not Detected
- Not Analysed
Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH87	CBH88	CBH88	CBH89 #	CBH89	CBH90	CBH90
Geological Origin	THRESHOLD			Aeolian	Fill	Colluvium	Fill	Colluvium	Fill	Sand
Date of Sampling	CONCENTRATION			10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	17-Mar-05	17-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.5-0.7	0.0-0.3	0.5-0.8	0.0-0.3	0.5-1.0	0.0-0.2	0.5-0.95
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	1	<0.5	<1	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	13	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	17	<5	15	15	8	<5
Nickel	60 [3]	600 [1]	3000 [2]	<2	11	<2	14	2	3	<2
Lead	600 [3]	600 [1]	1500 [2]	<5	27	10	21	180	9	6
Zinc	200 [3]	14000 [1]	35000 [2]	<5	120	15	76	320	17	15
Mercury	1 [3]	30 [1]	75 [2]	0.06	0.11	0.05	<0.1	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<2	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<50	<10	<10	<10
C15 - C28 Fraction				<50	70	<50	<100	60	<50	<50
C29 - C36 Fraction				<50	90	<50	<100	60	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	160	ND	ND	120	ND	ND
BTEX										
Benzene		1 [4]	1 [4]	<0.2	-	<0.2	<0.2	<0.2	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	-	<1	<0.2	<1	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	-	<1	<0.2	<1	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	-	<3	<0.4	<3	-	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	2.8	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	<0.5	2	1.2	<0.5	<0.5
Pyrene				<0.5	<0.5	<0.5	2.5	1.2	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	1.1	0.8	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	0.9	0.8	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1.5	2	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	0.8	1	<0.5	<0.5
Indeno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	0.5	0.7	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	ND	11.2	8.6	ND	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	<1	-	-	-	<1	<1
Naphthalene				-	<1	-	-	-	<1	<1
1.2.4-Trimethylbenze			170 [6]	-	<1	-	-	-	<1	<1
Other VOCs				-	ND	-	-	-	ND	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	ND	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	ND	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	-	-	-	ND	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed
Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH91	CBH91	CBH92	CBH92	CBH93	CBH94	CBH94
Geological Origin	THRESHOLD			Fill	Aeolian	Fill	Sand	Fill	Colluvium	Aeolian
Date of Sampling	CONCENTRATION			10-Mar-05	10-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	10-Mar-05	10-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.1	0.5-0.6	0.0-0.1	0.15-0.25	0.0-0.05	0.2-0.3	0.8-1.0
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	6	<5	5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	10	<5	<5	<5	<5	5	<5
Copper	100 [3]	2000 [1]	5000 [2]	10	<5	9	<5	7	12	<5
Nickel	60 [3]	600 [1]	3000 [2]	18	<2	3	<2	<2	10	<2
Lead	600 [3]	600 [1]	1500 [2]	7	<5	5	6	<5	21	9
Zinc	200 [3]	14000 [1]	35000 [2]	27	<5	24	17	6	69	53
Mercury	1 [3]	30 [1]	75 [2]	0.05	<0.05	<0.05	<0.05	<0.05	0.31	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	-	<5	<5	<5
C10 - C14 Fraction				<10	<10	10	-	<10	10	<10
C15 - C28 Fraction				<50	<50	<50	-	<50	60	<50
C29 - C36 Fraction				<50	<50	<50	-	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	10	-	ND	70	ND
BTEX										
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	-	<0.2	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	-	<1	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	-	<1	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	-	<3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	0.5	-	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Pyrene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	-	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	ND	-	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	-	-	-	-	-	<1
Naphthalene				-	-	-	-	-	-	<1
1.2.4-Trimethylbenze			170 [6]	-	-	-	-	-	-	<1
Other VOCs				-	-	-	-	-	-	ND
ORGANOCHLORINE PESTICIDES				ND	-	ND	-	ND	-	-
ORGANOPHOSPHOROUS PESTICIDES				ND	-	ND	-	ND	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	ND	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed

Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				CBH122	CBH122	CBH123	CBH123	HA22	HA22	HA23
Geological Origin	THRESHOLD			Fill	Aeolian	Fill	Aeolian	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			11-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.2-0.3	0.5-0.7	0.2-0.3	1.5-1.7	0.15-0.2	0.5-0.6	0.15-0.2
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	<5	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	<5	<5	<5	8	<5	19
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	<2	<2	3	<2	<2
Lead	600 [3]	600 [1]	1500 [2]	<5	<5	9	8	21	9	<5
Zinc	200 [3]	14000 [1]	35000 [2]	<5	<5	13	<5	39	19	9
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	ND	ND	ND	ND
BTEX										
Benzene		1 [4]	1 [4]	<0.2	-	<0.2	-	-	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	-	<1	-	-	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	-	<1	-	-	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	-	<3	-	-	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	ND	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	-	2	-	3	<1	-	<1
Naphthalene				-	<1	-	<1	<1	-	<1
1.2.4-Trimethylbenze			170 [6]	-	<1	-	<1	<1	-	<1
Other VOCs				-	ND	-	ND	ND	-	ND
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	-	ND	ND

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed

Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				HA24	HA24	HA25	HA25	HA26	HA26	HA28
Geological Origin	THRESHOLD			Fill	Sand	Fill	Sand	Fill	Fill	
Date of Sampling	CONCENTRATION			15-Mar-05	15-Mar-05	15-Mar-05	16-Mar-05	15-Mar-05	15-Mar-05	16-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.15-0.25	0.6-0.7	0.0-0.1	0.6-0.7	0.0-0.1	0.4-0.5	0.0-0.1
HEAVY METALS										
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	6	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	6	7	120	<5	<5	<5	5
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	6	2	<2	<2	<2
Lead	600 [3]	600 [1]	1500 [2]	7	170	170	<5	6	<5	6
Zinc	200 [3]	14000 [1]	35000 [2]	19	89	65	23	6	<5	27
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS										
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	-	<5
C10 - C14 Fraction				<10	<10	20	<10	<10	-	<10
C15 - C28 Fraction				<50	60	320	<50	<50	-	<50
C29 - C36 Fraction				<50	<50	200	<50	<50	-	<50
Total C10-C36		1000 [4]	1000 [4]	ND	60	540	ND	ND	-	ND
BTEX										
Benzene		1 [4]	1 [4]	-	<0.2	<0.2	<0.2	<0.2	-	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	-	<1	<1	<1	<1	-	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	<1	<1	<1	<1	-	<1
Total Xylene	14 [4]	25 [4]	25 [4]	-	<3	<3	<3	<3	-	<3
POLYCYCLIC AROMATIC HYDROCARBONS										
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Fluorene				<0.5	<0.5	0.6	<0.5	<0.5	-	<0.5
Phenanthrene				<0.5	2.2	6.6	<0.5	0.6	-	<0.5
Anthracene				<0.5	<0.5	2	<0.5	<0.5	-	<0.5
Fluoranthene				<0.5	3.2	7.8	<0.5	<0.5	-	<0.5
Pyrene				<0.5	3.4	8.4	<0.5	<0.5	-	<0.5
Benz(a)anthracene				<0.5	1.4	4.6	<0.5	<0.5	-	<0.5
Chrysene				<0.5	1.4	3.6	<0.5	<0.5	-	<0.5
Benzo(b)&(k)fluoranthene				<1	2	6	<1	<1	-	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	1.2	3.8	<0.5	<0.5	-	<0.5
Indeno(1.2.3.cd)pyrene				<0.5	0.9	2	<0.5	<0.5	-	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Benzo(g.h.i)perylene				<0.5	0.8	1.6	<0.5	<0.5	-	<0.5
Total PAH		40 [1]	100 [2]	ND	16.5	47	ND	0.6	-	ND
VOLATILE ORGANIC COMPOUNDS										
Methylene chloride			21 [6]	<1	-	-	-	-	-	-
Naphthalene				<1	-	-	-	-	-	-
1.2.4-Trimethylbenze			170 [6]	<1	-	-	-	-	-	-
Other VOCs				ND	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES				-	-	ND	-	ND	-	ND
ORGANOPHOSPHOROUS PESTICIDES				-	-	ND	-	ND	-	ND
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	ND

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
- Not Analysed

 # Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR3
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA B
All results in mg/kg

Sample ID_Depth(m)				HA28	HA29	HA29	ASBESTOS 1	ASBESTOS 2	ASBESTOS 3
Geological Origin	THRESHOLD				Fill	Colluvium			
Date of Sampling	CONCENTRATION			16-Mar-05	16-Mar-05	16-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.8-0.9	0.15-0.2	0.6-0.7			
HEAVY METALS									
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	-	-	-
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	-	-	-
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	-	-	-
Copper	100 [3]	2000 [1]	5000 [2]	<5	<5	<5	-	-	-
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	<2	-	-	-
Lead	600 [3]	600 [1]	1500 [2]	<5	6	<5	-	-	-
Zinc	200 [3]	14000 [1]	35000 [2]	25	31	25	-	-	-
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	<0.05	-	-	-
TOTAL PETROLEUM HYDROCARBONS									
C6 - C9 Fraction		65 [4]	65 [4]	-	<5	-	-	-	-
C10 - C14 Fraction				-	<10	-	-	-	-
C15 - C28 Fraction				-	<50	-	-	-	-
C29 - C36 Fraction				-	<50	-	-	-	-
Total C10-C36		1000 [4]	1000 [4]	-	ND	-	-	-	-
BTEX									
Benzene		1 [4]	1 [4]	-	-	-	-	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	-	-	-	-	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	-	-	-	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	-	-	-	-	-	-
POLYCYCLIC AROMATIC HYDROCARBONS									
Naphthalene				-	<0.5	-	-	-	-
Acenaphthylene				-	<0.5	-	-	-	-
Acenaphthene				-	<0.5	-	-	-	-
Fluorene				-	<0.5	-	-	-	-
Phenanthrene				-	<0.5	-	-	-	-
Anthracene				-	<0.5	-	-	-	-
Fluoranthene				-	<0.5	-	-	-	-
Pyrene				-	<0.5	-	-	-	-
Benz(a)anthracene				-	<0.5	-	-	-	-
Chrysene				-	<0.5	-	-	-	-
Benzo(b)&(k)fluoranthene				-	<1	-	-	-	-
Benzo(a)pyrene		2 [1]	5 [2]	-	<0.5	-	-	-	-
Indeno(1.2.3.cd)pyrene				-	<0.5	-	-	-	-
Dibenz(a.h)anthracene				-	<0.5	-	-	-	-
Benzo(g.h.i)perylene				-	<0.5	-	-	-	-
Total PAH		40 [1]	100 [2]	-	ND	-	-	-	-
VOLATILE ORGANIC COMPOUNDS									
Methylene chloride			21 [6]	-	<1	-	-	-	-
Naphthalene				-	<1	-	-	-	-
1.2.4-Trimethylbenze			170 [6]	-	<1	-	-	-	-
Other VOCs				-	ND	-	-	-	-
ORGANOCHLORINE PESTICIDES				-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	-	Y	Y	Y

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 *Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the* NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 Based on the USEPA Preliminary Remediation Goals for Industrial soil
ND Not Detected
\- Not Analysed
\# Soil Results for CBH89:0.0-0.3 were replaced with the results of DUPD2.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH95	CBH95	CBH96	CBH96	CBH97	CBH97	CBH98	CBH98
Geological Origin	THRESHOLD			Fill	Aeolian	Asphalt	Aeolian	Fill	Fill	Fill	Sand
Date of Sampling	CONCENTRATION			11-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05	10-Mar-05	10-Mar-05	16-Mar-05	16-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.7-1.15	2.5-2.95	0.05-0.2	3.5-3.95	0.0-0.2	0.5-0.95	0.0-0.2	2.8-3.35
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	<5	<5	<5	15	<5
Copper	100 [3]	2000 [1]	5000 [2]	64	<5	160	<5	7	6	33	<5
Nickel	60 [3]	600 [1]	3000 [2]	4	<2	7	<2	2	2	9	<2
Lead	600 [3]	600 [1]	1500 [2]	38	<5	9	<5	21	22	62	<5
Zinc	200 [3]	14000 [1]	35000 [2]	81	93	44	18	35	36	210	25
Mercury	1 [3]	30 [1]	75 [2]	0.18	0.06	<0.05	<0.05	<0.05	<0.05	0.49	0.11
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	160	<50	<50	70	70	<50
C29 - C36 Fraction				<50	<50	300	<50	<50	<50	90	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	460	ND	ND	70	160	0
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				0.6	<0.5	<0.5	<0.5	0.6	0.7	<0.5	<0.5
Pyrene				0.7	<0.5	<0.5	<0.5	0.7	0.8	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	1.3	ND	ND	ND	1.3	1.5	ND	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	ND	-	ND	-	-	-
Chlordane		100 [1]	250 [2]	-	-	ND	-	ND	-	-	-
Other OCPs				-	-	ND	-	ND	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:

Concentration exceeds phytotoxicity based threshold concentration

Concentration exceeds the open space based threshold concentration

Concentration exceeds the commercial based threshold concentration

Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines

2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines

3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines

4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites

5 NSW EPA advice is that there should be no asbestos in surface soil

6 ASSM <1000 tonnes guideline for coarse textured soils

ND ND Not Detected

\- Not Analysed

* Analysis requested but not completed by the laboratory

\# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH99	CBH99	CBH99	CBH100	CBH100	CBH100;	CBH101	CBH101
Geological Origin	THRESHOLD			Fill	Fill	Sand	Fill	Sand	Sand	Fill	Sand
Date of Sampling	CONCENTRATION			16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	16-Mar-05	18-Mar-05	18-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	1.4-1.75	4.55-4.7	1.0-1.4	1.5-1.95	3.0-3.45	1.0-1.45	1.95-2.4
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	-	8	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	-	1.2	<0.5
Chromium	400 [3]	24% [1]	60% [2]	10	<5	<5	<5	<5	-	6	<5
Copper	100 [3]	2000 [1]	5000 [2]	24	<5	<5	<5	<5	-	82	<5
Nickel	60 [3]	600 [1]	3000 [2]	9	<2	<2	4	<2	-	9	<2
Lead	600 [3]	600 [1]	1500 [2]	66	12	<5	<5	13	-	52	9
Zinc	200 [3]	14000 [1]	35000 [2]	110	32	21	21	35	-	130	14
Mercury	1 [3]	30 [1]	75 [2]	0.3	0.13	<0.05	0.05	0.1	-	0.1	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	-	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	-	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	-	<50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	-	<50	<50
Total C10-C36		1000 [4]	1000 [4]	0	0	0	ND	0	-	ND	ND
BTEX											
Benzene		1 [4]	1 [4]	-	-	-	<0.2	<0.2	-	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	-	-	-	<1	<1	-	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	-	-	<1	<1	-	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	-	-	-	<3	<3	-	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Fluoranthene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	-	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
i<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	ND	ND	ND	-	ND	ND
VOLATILE ORGANIC COMPOUNDS				ND	ND	ND	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	ND	ND	ND	-	-	-	-	-
Chlordane		100 [1]	250 [2]	ND	ND	ND	-	-	-	-	-
Other OCPs				ND	ND	ND	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]		ND		ND	-	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	0.04	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	6.8	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	4.5	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	<5	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	<5	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	<5	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH102	CBH102	CBH102	CBH103	CBH103	CBH104	CBH104	CBH105
Geological Origin	THRESHOLD			Fill	Fill	Alluvium	Fill	Sand	Fill	Sand	Fill
Date of Sampling	CONCENTRATION			21-Mar-05	21-Mar-05	21-Mar-05	18-Mar-05	18-Mar-05	21-Mar-05	21-Mar-05	18-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	1.0-1.45	2.2-2.45	1.1-1.45	2.2-2.45	0.0-0.2	1.1-1.2	0.0-0.2
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	16	12	<5	<5	<5	<5	6
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	1	<0.5	0.7	<0.5	<0.5	<0.5	0.6
Chromium	400 [3]	24% [1]	60% [2]	10	5	8	18	5	17	<5	11
Copper	100 [3]	2000 [1]	5000 [2]	16	110	16	44	<5	14	<5	27
Nickel	60 [3]	600 [1]	3000 [2]	10	9	3	98	<2	8	<2	9
Lead	600 [3]	600 [1]	1500 [2]	34	150	60	9	11	75	<5	59
Zinc	200 [3]	14000 [1]	35000 [2]	71	190	57	43	9	66	<5	91
Mercury	1 [3]	30 [1]	75 [2]	0.3	0.28	0.55	<0.05	<0.05	0.41	<0.05	0.56
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	-	<5	<5	<5	<5	<5	-
C10 - C14 Fraction				<10	-	<10	<10	<10	<10	<10	-
C15 - C28 Fraction				<50	-	60	<50	<50	<50	<50	-
C29 - C36 Fraction				<50	-	<50	60	70	<50	<50	-
Total C10-C36		1000 [4]	1000 [4]	ND	-	ND	60	70	ND	ND	-
BTEX											
Benzene		1 [4]	1 [4]	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	-	<1	<1	<1	<1	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	-	<1	<1	<1	<1	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	-	<3	<3	<3	<3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthylene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluorene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Phenanthrene				<0.5	-	0.6	<0.5	<0.5	<0.5	<0.5	-
Anthracene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluoranthene				<0.5	-	2.2	<0.5	<0.5	<0.5	<0.5	-
Pyrene				<0.5	-	2.6	<0.5	<0.5	<0.5	<0.5	-
Benz(a)anthracene				<0.5	-	1.6	<0.5	<0.5	<0.5	<0.5	-
Chrysene				<0.5	-	1.4	<0.5	<0.5	<0.5	<0.5	-
Benzo(b)&(k)fluoranthene				<1	-	3	<1	<1	<1	<1	-
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	-	2	<0.5	<0.5	<0.5	<0.5	-
I<0.5eno(1.2.3.cd)pyrene				<0.5	-	1.4	<0.5	<0.5	<0.5	<0.5	-
Dibenz(a.h)anthracene				<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Benzo(g.h.i)perylene				<0.5	-	1.2	<0.5	<0.5	<0.5	<0.5	-
Total PAH		40 [1]	100 [2]	ND	-	16	ND	ND	ND	ND	-
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	ND	ND	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	ND	ND	-	-	-
Other OCPs				-	-	-	ND	ND	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	ND	ND	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	ND	ND	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	ND	-	ND	-	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 *Based on NSW EPA (1994) Guidelines for Asssssing Service Station Sites*
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH105	CBH105	CBH105	CBH106	CBH106	CBH106	CBH110	CBH110
Geological Origin	THRESHOLD			Fill	Colluvium	Sand	Fill	Fill	Colluvium	Fill	Alluvium
Date of Sampling	CONCENTRATION			18-Mar-05	18-Mar-05	18-Mar-05	21-Mar-05	21-Mar-05	21-Mar-05	11-Mar-05	11-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	1.2-1.65	2.4-2.85	4.0-4.45	0.0-0.2	0.5-0.7	1.4-1.65	0.5-0.95	2.0-2.45
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	6	-	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	10	22	-	11	9	<5	33	<5
Copper	100 [3]	2000 [1]	5000 [2]	6	<5	-	23	7	<5	19	<5
Nickel	60 [3]	600 [1]	3000 [2]	12	7	-	8	9	<2	7	<2
Lead	600 [3]	600 [1]	1500 [2]	24	21	-	43	20	14	45	<5
Zinc	200 [3]	14000 [1]	35000 [2]	30	57	-	81	21	29	110	8
Mercury	1 [3]	30 [1]	75 [2]	0.16	0.06	-	0.31	0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	8	-	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	-	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	-	120	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	-	80	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	8	-	200	ND	ND	ND	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	-	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	-	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	-	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	<0.5
Pyrene				<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	<0.5
Benz(a)anthracene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	-	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	-	ND	ND	ND	1.2	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	ND	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	ND	-
Other OCPs				-	-	-	-	-	-	ND	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	0.18	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	7.6	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	3.3	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	<5.0	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	22.7	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	18	-	-	-	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH111	CBH111	CBH112	CBH112	CBH113	CBH113	CBH114	CBH114
Geological Origin	THRESHOLD			Fill	Colluvium	Fill	Alluvium	Fill	Alluvium	Fill	Aeolian
Date of Sampling	CONCENTRATION			11-Mar-05	11-Mar-05	10-Mar-05	10-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	2.9-3.3	0.5-0.95	2.5-2.95	1.0-1.45	2.0-2.4	0.0-0.2	2.3-2.75
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	6	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	6	<5	<5	14	10	<5	5	<5
Copper	100 [3]	2000 [1]	5000 [2]	12	<5	13	16	17	<5	17	<5
Nickel	60 [3]	600 [1]	3000 [2]	4	<2	5	14	3	2	6	<2
Lead	600 [3]	600 [1]	1500 [2]	31	<5	41	49	120	<5	40	<5
Zinc	200 [3]	14000 [1]	35000 [2]	49	<5	58	100	99	31	70	<5
Mercury	1 [3]	30 [1]	75 [2]	0.08	<0.05	<0.05	0.08	0.08	<0.05	0.07	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	-	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	-	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	-	<50	<50	60	<50
C29 - C36 Fraction				<50	<50	<50	-	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	-	ND	ND	60	ND
BTEX											
Benzene		1 [4]	1 [4]	-	<0.2	<0.2	-	-	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	-	<1	<1	-	-	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	<1	<1	-	-	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	-	<3	<3	-	-	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	0.6	-	<0.5	<0.5	1.8	<0.5
Anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	1.2	-	0.5	<0.5	3.2	<0.5
Pyrene				<0.5	<0.5	1.4	-	0.6	<0.5	3.4	<0.5
Benz(a)anthracene				<0.5	<0.5	0.7	-	<0.5	<0.5	1.4	<0.5
Chrysene				<0.5	<0.5	0.6	-	<0.5	<0.5	1.4	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	1	-	<1	<1	2	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	0.7	-	<0.5	<0.5	1.6	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	0.5	-	<0.5	<0.5	1.2	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	0.5	-	<0.5	<0.5	1	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	7.2	-	1.1	ND	17	ND
VOLATILE ORGANIC COMPOUNDS				ND	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
' Analysis requested but not completed by the laboratory
Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH115	CBH115	CBH116	CBH116	CBH117	CBH117	CBH118	CBH118
Geological Origin	THRESHOLD			Fill	Fill	Fill	Alluvium	Fill	Aeolian	Fill	Alluvium
Date of Sampling	CONCENTRATION			11-Mar-05	11-Mar-05	10-Mar-05	10-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05	11-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	1.0-1.45	2.7-3.1	0.0-0.2	1.5-1.8	0.0-0.2	2.5-2.95	0.5-0.8	2.5-2.95
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	6	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	9	7	13	8	<5	7	6
Copper	100 [3]	2000 [1]	5000 [2]	9	16	13	<5	14	<5	13	15
Nickel	60 [3]	600 [1]	3000 [2]	5	6	<2	<2	10	<2	4	6
Lead	600 [3]	600 [1]	1500 [2]	32	66	61	<5	54	<5	62	69
Zinc	200 [3]	14000 [1]	35000 [2]	150	140	52	<5	73	<5	84	110
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.09	0.09	<0.05	0.09	<0.05	0.12	0.07
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	80	<50	80	120
C29 - C36 Fraction				60	<50	<50	<50	50	<50	60	70
Total C10-C36		1000 [4]	1000 [4]	60	ND	ND	ND	130	ND	140	190
BTEX											
Benzene		1 [4]	1 [4]	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	-	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	-	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	0.8	<0.5	<0.5	0.6	<0.5	0.5	0.6
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	1.4	0.8	<0.5	1.4	<0.5	1.2	1.2
Pyrene				<0.5	1.4	1	<0.5	1.4	<0.5	1.2	1.4
Benz(a)anthracene				<0.5	0.7	0.5	<0.5	0.7	<0.5	0.6	0.7
Chrysene				<0.5	0.6	<0.5	<0.5	0.6	<0.5	0.6	0.7
Benzo(b)&(k)fluoranthene				<1	1	<1	<1	1	<1	1	1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	0.7	0.6	<0.5	0.7	<0.5	0.7	0.8
I<0.5eno(1.2.3.cd)pyrene				<0.5	0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	7.1	2.1	ND	7.5	ND	5.8	6.9
VOLATILE ORGANIC COMPOUNDS				ND	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	ND	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	ND	-	-	-	-	-
Other OCPs				-	-	ND	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES		–		-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-		-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	0.07	-	-	-	-	-	0.11
ph (KCl)		4.5 [6]		-	7.8	-	-	-	-	-	5.8
pH (ox) Peroxide Extract		3 [6]		-	7.4	-	-	-	-	-	4.1
Total Actual Acidity (mol H+/t)		18 [6]		-	<5.0	-	-	-	-	-	12.8
Total Potential Acidity (mol H+/t)		18 [6]		-	<5.0	-	-	-	-	-	45.8
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	<5	-	-	-	-	-	33

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH119	CBH119	CBH119	CBH119	CBH120	CBH120	CBH120	CBH121
Geological Origin	THRESHOLD			Fill	Fill	Alluvium	Alluvium	Fill	Fill	alluvium	Fill
Date of Sampling	CONCENTRATION			10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05	10-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.5-0.95	1.5-1.95	2.5-2.7	3.5-3.95	0.0-0.2	0.5-0.95	2.5-2.95	0.5-0.95
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	5	--	<5	*	*	*	*
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	--	<0.5	*	*	*	*
Chromium	400 [3]	24% [1]	60% [2]	<5	13	--	<5	*	*	*	*
Copper	100 [3]	2000 [1]	5000 [2]	16	670	--	<5	*	*	*	*
Nickel	60 [3]	600 [1]	3000 [2]	2	7	--	<2	*	*	*	*
Lead	600 [3]	600 [1]	1500 [2]	67	580	--	<5	*	*	*	*
Zinc	200 [3]	14000 [1]	35000 [2]	74	530	--	25	*	*	*	*
Mercury	1 [3]	30 [1]	75 [2]	0.09	0.14	--	<0.05	*	*	*	*
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	-	<5	-	*	*	*
C10 - C14 Fraction				<10	<10	-	<10	-	*	*	*
C15 - C28 Fraction				120	50	-	<50	-	*	*	*
C29 - C36 Fraction				<50	<50	-	<50	-	*	*	*
Total C10-C36		1000 [4]	1000 [4]	120	50	-	ND	-	*	*	*
BTEX											
Benzene		1 [4]	1 [4]	-	<0.2	-	<0.2	-	-	*	*
Toluene	1.4 [4]	130 [4]	130 [4]	-	<1	-	<1	-	-	*	*
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	<1	-	<1	-	-	*	*
Total Xylene	14 [4]	25 [4]	25 [4]	-	<3	-	<3	-	-	*	*
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	-	<0.5	-	*	*	*
Acenaphthylene				<0.5	<0.5	-	<0.5	-	*	*	*
Acenaphthene				<0.5	<0.5	-	<0.5	-	*	*	*
Fluorene				<0.5	<0.5	-	<0.5	-	*	*	*
Phenanthrene				1.4	1.6	-	<0.5	-	*	*	*
Anthracene				<0.5	<0.5	-	<0.5	-	*	*	*
Fluoranthene				2.2	3.2	-	<0.5	-	*	*	*
Pyrene				2.4	3.2	-	<0.5	-	*	*	*
Benz(a)anthracene				1.2	1.6	-	<0.5	-	*	*	*
Chrysene				1	1.4	-	<0.5	-	*	*	*
Benzo(b)&(k)fluoranthene				2	3	-	<1	-	*	*	*
Benzo(a)pyrene		2 [1]	5 [2]	1.2	1.8	-	<0.5	-	*	*	*
I<0.5eno(1.2.3.cd)pyrene				0.8	1.2	-	<0.5	-	*	*	*
Dibenz(a.h)anthracene				<0.5	<0.5	-	<0.5	-	*	*	*
Benzo(g.h.i)perylene				0.7	1.2	-	<0.5	-	*	*	*
Total PAH		40 [1]	100 [2]	12.9	18.2	-	ND	-	*	*	*
VOLATILE ORGANIC COMPOUNDS				ND	ND	-	-		*	*	*
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	*	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	*	-	-	-
Other OCPs				-	-	-	-	*	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	*	-	-	*	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	*	-	-	*
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	0.04	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	6.8	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	4.3	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	<5.0	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	<5.0	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	<5	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH121	CBH121	CBH128	CBH128	CBH129	CBH129	CBH130	CBH130
Geological Origin	THRESHOLD			Fill	Alluvium	Fill	Sand	Fill	Aeolian	Fill	Aeolian
Date of Sampling	CONCENTRATION			10-Mar-05	10-Mar-05	15-Mar-05	15-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	1.5-1.9	2.5-2.95	0.0-0.2	2.2-2.65	0.0-0.2	0.5-0.95	0.05-0.2	1.0-1.5
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	*	*	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	*	*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	*	*	<5	<5	6	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	*	*	42	<5	12	13	38	<5
Nickel	60 [3]	600 [1]	3000 [2]	*	*	3	<2	11	4	3	<2
Lead	600 [3]	600 [1]	1500 [2]	*	*	120	<5	38	53	10	<5
Zinc	200 [3]	14000 [1]	35000 [2]	*	*	33	<5	67	100	27	8
Mercury	1 [3]	30 [1]	75 [2]	*	*	<0.05	<0.05	0.1	0.14	0.12	0.13
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	*	*	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				*	*	10	<10	<10	10	<10	<10
C15 - C28 Fraction				*	*	300	<50	<50	280	100	<50
C29 - C36 Fraction				*	*	140	<50	<50	50	60	<50
Total C10-C36		1000 [4]	1000 [4]	*	*	450	ND	ND	340	160	ND
BTEX											
Benzene		1 [4]	1 [4]	-	*	<0.2	<0.2	-	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	-	*	<1	<1	-	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	-	*	<1	<1	-	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	-	*	<3	<3	-	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				*	*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				*	*	1.2	<0.5	<0.5	<0.5	0.6	<0.5
Acenaphthene				*	*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				*	*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				*	*	6.2	<0.5	<0.5	<0.5	2.4	<0.5
Anthracene				*	*	2	<0.5	<0.5	<0.5	0.6	<0.5
Fluoranthene				*	*	10	<0.5	1.4	<0.5	4.4	<0.5
Pyrene				*	*	10	<0.5	1.6	<0.5	4.6	<0.5
Benz(a)anthracene				*	*	5.4	<0.5	0.7	<0.5	2	<0.5
Chrysene				*	*	4.4	<0.5	0.7	<0.5	1.8	<0.5
Benzo(b)&(k)fluoranthene				*	*	7	<1	1	<1	3	<1
Benzo(a)pyrene		2 [1]	5 [2]	*	*	4.6	<0.5	0.8	<0.5	2.2	<0.5
I<0.5eno(1.2.3.cd)pyrene				*	*	3.4	<0.5	0.6	<0.5	1.8	<0.5
Dibenz(a.h)anthracene				*	*	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				*	*	2.6	<0.5	0.6	<0.5	1.6	<0.5
Total PAH		40 [1]	100 [2]	*	*	57.4	ND	7.4	ND	25	ND
VOLATILE ORGANIC COMPOUNDS				*	*	-	-	ND	ND	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	ND	-	ND	ND
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	*		-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	-	ND	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH131	CBH131	CBH132	CBH132	CBH133	CBH133	CBH134	CBH134
Geological Origin	THRESHOLD			Fill	Aeolian	Fill	Aeolian	Fill	Aeolian	Fill	Sand
Date of Sampling	CONCENTRATION			14-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05	14-Mar-05	15-Mar-05	15-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.4-0.6	1.5-1.9	0.5-0.95	2.0-2.45	0.0-0.2	1.5-1.8	1.0-1.4	3.2-3.5
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	11	<5	<5	<5	<5	<5	5	<5
Copper	100 [3]	2000 [1]	5000 [2]	14	<5	<5	<5	27	7	28	8
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	3	<2	12	<2	3	<2
Lead	600 [3]	600 [1]	1500 [2]	79	<5	7	13	16	5	82	47
Zinc	200 [3]	14000 [1]	35000 [2]	85	21	13	49	25	9	180	95
Mercury	1 [3]	30 [1]	75 [2]	0.23	0.09	<0.05	<0.05	<0.05	<0.05	0.1	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	50	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	ND	ND	ND	50	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	0.8
Pyrene				0.6	<0.5	<0.5	<0.5	<0.5	<0.5	1	0.9
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	<1	1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	1.2	ND	ND	ND	ND	ND	5.1	2.2
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	ND	ND	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
\# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH135	CBH135	CBH135	CBH136	CBH136	CBH137	CBH137	CBH138
Geological Origin	THRESHOLD			Fill	Fill	Sand	Fill	Sand	Fill	Sand	Fill
Date of Sampling	CONCENTRATION			15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.5-0.7	1.5-1.95	3.5-3.7	0.0-0.2	1.0-1.4	0.0-0.2	1.0-1.4	1.2-1.7
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	6	<5	<5	<5	<5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	19	15	<5	<5	<5	8	<5	<5
Nickel	60 [3]	600 [1]	3000 [2]	4	7	<2	<2	<2	4	<2	<2
Lead	600 [3]	600 [1]	1500 [2]	140	80	<5	<5	<5	18	<5	5
Zinc	200 [3]	14000 [1]	35000 [2]	220	120	<5	6	<5	19	<5	6
Mercury	1 [3]	30 [1]	75 [2]	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				70	180	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	120	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	70	300	ND	ND	ND	ND	ND	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				2	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				0.6	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				3	3.8	<0.5	<0.5	<0.5	0.8	<0.5	<0.5
Pyrene				3	3.8	<0.5	<0.5	<0.5	0.9	<0.5	<0.5
Benz(a)anthracene				1.6	1.6	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
Chrysene				1.4	1.4	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Benzo(b)&(k)fluoranthene				2	3	<1	<1	<1	1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	1.4	1.8	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
I<0.5eno(1.2.3.cd)pyrene				1.2	1.4	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				1	1	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Total PAH		40 [1]	100 [2]	17.2	20.8	ND	ND	ND	5.9	ND	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	ND	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	ND	-	-	-	-
Other OCPs				-	-	-	ND	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	ND	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	-	ND	-	ND	-	ND
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
\# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH138	CBH139	CBH139	CBH139	CBH140	CBH140	CBH141	CBH141
Geological Origin	THRESHOLD			Sand	Fill	Fill	Sand	Fill	Sand	Fill	Sand
Date of Sampling	CONCENTRATION			15-Mar-05	15-Mar-05	15-Mar-05	15-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	2.0-2.2	0.0-0.2	1.7-1.9	2.0-2.5	0.0-0.2	1.4-1.5	0.5-0.95	1.3-1.75
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	-	<5	<5	6	<5	9
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	1.8	-	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	15	-	<5	8	<5	6	6
Copper	100 [3]	2000 [1]	5000 [2]	<5	190	-	<5	11	10	19	<5
Nickel	60 [3]	600 [1]	3000 [2]	<2	6	-	<2	3	<2	7	<2
Lead	600 [3]	600 [1]	1500 [2]	<5	420	-	<5	66	36	57	7
Zinc	200 [3]	14000 [1]	35000 [2]	<5	530	-	6	61	59	110	28
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.08	-	<0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	-	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	-	<10	20	<10	50	<10
C15 - C28 Fraction				<50	<50	-	<50	300	200	280	<50
C29 - C36 Fraction				<50	<50	-	<50	420	140	90	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	-	ND	740	340	420	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	-	-	<0.2	<0.2	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	-	-	<1	<1	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	-	-	<1	<1	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	-	-	<3	<3	-	-
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	-	<0.5	<0.5	0.6	4.4	<0.5
Anthracene				<0.5	<0.5	-	<0.5	<0.5	<0.5	1.4	<0.5
Fluoranthene				<0.5	<0.5	-	<0.5	0.7	2.4	7.4	<0.5
Pyrene				<0.5	<0.5	-	<0.5	0.8	2.8	7.2	<0.5
Benz(a)anthracene				<0.5	<0.5	-	<0.5	<0.5	1.8	3.4	<0.5
Chrysene				<0.5	<0.5	-	<0.5	<0.5	1.4	2.6	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	-	<1	<1	5	5	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	-	<0.5	0.5	3.2	3.4	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	-	<0.5	<0.5	3.2	2.8	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	-	<0.5	<0.5	0.6	0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	-	<0.5	<0.5	2.2	1.8	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	-	ND	2	23.2	39.9	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	ND	-	-	ND	ND
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	ND	-	-	ND	-	-	-
Chlordane		100 [1]	250 [2]	-	ND	-	-	ND	-	-	-
Other OCPs				-	ND	-	-	ND	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	ND	-	-	ND	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	ND	-	-	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
' Analysis requested but not completed by the laboratory
Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CBH142	CBH142	CBH143	CBH143	CBH144	CBH144	CTP1	CTP1
Geological Origin	THRESHOLD			Fill	Fill	Fill	Sand	Fill	Sand	Fill	Fill
Date of Sampling	CONCENTRATION			17-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	22-Mar-05	22-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	0.5-0.7	0.5-0.6	1.7-2.15	0.5-0.6	1.5-1.95	0.0-0.2	1.0-1.2
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	-	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Chromium	400 [3]	24% [1]	60% [2]	5	6	5	<5	6	7	-	8
Copper	100 [3]	2000 [1]	5000 [2]	10	17	12	<5	15	<5	-	19
Nickel	60 [3]	600 [1]	3000 [2]	<2	5	6	4	9	6	-	6
Lead	600 [3]	600 [1]	1500 [2]	54	64	26	12	38	6	-	67
Zinc	200 [3]	14000 [1]	35000 [2]	53	110	69	34	85	25	-	98
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	-	0.13
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	-	<5
C10 - C14 Fraction				50	<10	<10	<10	<10	<10	-	20
C15 - C28 Fraction				220	<50	<50	<50	<50	<50	-	720
C29 - C36 Fraction				80	<50	<50	<50	<50	<50	-	280
Total C10-C36		1000 [4]	1000 [4]	350	ND	ND	ND	ND	ND	-	1020
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	-	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	-	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	-	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	2.4
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	1.6
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	15
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	4.2
Fluoranthene				<0.5	0.8	0.6	<0.5	0.6	<0.5	-	25
Pyrene				<0.5	0.9	0.7	<0.5	0.7	<0.5	-	24
Benz(a)anthracene				<0.5	0.5	<0.5	<0.5	<0.5	<0.5	-	11
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	8
Benzo(b)&(k)fluoranthene				<1	1	<1	<1	<1	<1	-	17
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	-	10
I<0.5eno(1.2.3.cd)pyrene				<0.5	0.7	0.5	<0.5	<0.5	<0.5	-	6.4
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.9
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	5.6
Total PAH		40 [1]	100 [2]	ND	4.6	1.8	ND	1.3	ND	-	131.1
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
- Concentration exceeds phytotoxicity based threshold concentration
- Concentration exceeds the open space based threshold concentration
- Concentration exceeds the commercial based threshold concentration
- Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CTP2	CTP2	CTP3	CTP3	CTP4	CTP4	CTP5	CTP5
Geological Origin	THRESHOLD			Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			22-Mar-05	22-Mar-05	22-Mar-05	22-Mar-05	22-Mar-05	22-Mar-05	22-Mar-05	22-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	3.0-3.2	1.0-1.2	2.0-2.2	1.0-1.2	2.0-2.2	0.0-0.2	1.0-1.2
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	<5	<5	-
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Chromium	400 [3]	24% [1]	60% [2]	9	8	9	7	8	13	8	-
Copper	100 [3]	2000 [1]	5000 [2]	18	29	21	15	25	26	18	-
Nickel	60 [3]	600 [1]	3000 [2]	6	7	6	6	6	10	6	-
Lead	600 [3]	600 [1]	1500 [2]	62	84	98	59	88	110	59	-
Zinc	200 [3]	14000 [1]	35000 [2]	91	140	140	83	150	200	94	-
Mercury	1 [3]	30 [1]	75 [2]	0.07	0.41	0.14	0.08	0.14	0.13	0.08	-
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	-
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	-
C15 - C28 Fraction				70	<50	<50	<50	<50	60	70	-
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	90	-
Total C10-C36		1000 [4]	1000 [4]	70	ND	ND	ND	ND	60	160	-
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Phenanthrene				0.7	<0.5	0.5	0.5	0.5	1.2	<0.5	-
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Fluoranthene				3	0.8	1.8	1.2	1.2	3	1.8	-
Pyrene				3.4	1	2	1.2	1.4	3.2	1.8	-
Benz(a)anthracene				1.8	0.5	1	0.7	0.7	1.6	1	-
Chrysene				1.6	0.5	0.8	0.6	0.7	1.2	0.8	-
Benzo(b)&(k)fluoranthene				3	1	2	1	1	3	2	-
Benzo(a)pyrene		2 [1]	5 [2]	1.8	0.7	1.2	0.8	1	1.8	1.2	-
I<0.5eno(1.2.3.cd)pyrene				1.2	0.5	0.9	0.5	0.6	1.2	0.7	-
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Benzo(g.h.i)perylene				1	0.5	0.8	0.5	0.6	1	0.7	-
Total PAH		40 [1]	100 [2]	17.5	5.5	11	7	7.7	17.2	10	-
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	-	ND	-	-	ND	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:

Concentration exceeds phytotoxicity based threshold concentration

Concentration exceeds the open space based threshold concentration

Concentration exceeds the commercial based threshold concentration

Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines

2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines

3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines

4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites

5 NSW EPA advice is that there should be no asbestos in surface soil

6 ASSM <1000 tonnes guideline for coarse textured soils

ND ND Not Detected

- Not Analysed

* Analysis requested but not completed by the laboratory

Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CTP5	CTP6	CTP6	CTP7	CTP7	CTP8	CTP8	CTP1
Geological Origin	THRESHOLD			Sand	Fill	Sand	Fill	Sand	Fill	Sand	Sand
Date of Sampling	CONCENTRATION			22-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	22-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	2.0-2.2	0.0-0.2	0.5-0.8	0.0-0.2	0.5-0.6	0.0-0.2	0.8-1.0	1.9-2.2
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	<5	16	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	<5	<5	<5	<5	5	<5	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	<5	<5	7	<5	15	<5	<5
Nickel	60 [3]	600 [1]	3000 [2]	<2	<2	<2	<2	<2	3	<2	<2
Lead	600 [3]	600 [1]	1500 [2]	<5	6	<5	41	<5	160	<5	<5
Zinc	200 [3]	14000 [1]	35000 [2]	14	<5	<5	66	<5	160	<5	<5
Mercury	1 [3]	30 [1]	75 [2]	<0.05	0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
C29 - C36 Fraction				<50	<50	<50	180	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	ND	180	ND	ND	ND	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	ND	ND	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	-	-	-	-
Other OCPs				-	-	-	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	-	ND	-	ND	-	-	-	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) *Guidelines for Assessing Service Station Sites*
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
\# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CTP10	CTP10	CTP11	CTP11	CTP12	CTP12	CTP13 #	CTP13
Geological Origin	THRESHOLD			Fill	Sand	Fill	Sand	Fill	Fill	Fill	Sand
Date of Sampling	CONCENTRATION			23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	23-Mar-05	24-Mar-05	24-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.5-0.7	2.0-2.2	0.5-0.6	2.0-2.2	1.0-1.2	2.3-2.6	0.4-0.6	0.7-0.9
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	<5	6	6	9	<5	7	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
Chromium	400 [3]	24% [1]	60% [2]	<5	6	19	17	10	12	7	<5
Copper	100 [3]	2000 [1]	5000 [2]	<5	5	30	<5	17	16	15	<5
Nickel	60 [3]	600 [1]	3000 [2]	<2	2	7	<2	7	3	6	<2
Lead	600 [3]	600 [1]	1500 [2]	14	14	68	49	49	99	114	<5
Zinc	200 [3]	14000 [1]	35000 [2]	31	25	110	15	110	96	228	6
Mercury	1 [3]	30 [1]	75 [2]	<0.05	<0.05	0.1	0.09	0.08	0.08	<0.1	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<2	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<50	<10
C15 - C28 Fraction				<50	<50	80	<50	60	<50	280	<50
C29 - C36 Fraction				<50	<50	50	<50	<50	<50	290	<50
Total C10-C36		1000 [4]	1000 [4]	ND	ND	130	ND	60	ND	570	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	-	-
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				<0.5	<0.5	0.6	<0.5	0.5	<0.5	4.8	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<0.5
Fluoranthene				<0.5	<0.5	0.7	<0.5	1.6	<0.5	23.1	<0.5
Pyrene				<0.5	<0.5	0.7	<0.5	1.6	0.6	24.9	<0.5
Benz(a)anthracene				<0.5	<0.5	<0.5	<0.5	0.7	<0.5	11.4	<0.5
Chrysene				<0.5	<0.5	<0.5	<0.5	0.7	<0.5	10	<0.5
Benzo(b)&(k)fluoranthene				<1	<1	<1	<1	1	<1	17.6	<1
Benzo(a)pyrene		2 [1]	5 [2]	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	10.7	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	0.6	<0.5	5.7	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	0.6	<0.5	7.3	<0.5
Total PAH		40 [1]	100 [2]	ND	ND	2	ND	8.1	0.6	123.1	ND
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-	<0.5	ND
ORGANOCHLORINE PESTICIDES										-	
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	-	-	ND	-	-	-
Chlordane		100 [1]	250 [2]	-	-	-	-	ND	-	-	-
Other OCPs				-	-	-	-	ND	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	-	-	ND	-		-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	ND	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CTP14	CTP14	CTP15	CTP15	CTP16	CTP16	CTP17	CTP17
Geological Origin	THRESHOLD			Fill	Fill	Fill	Sand	Fill	Fill	Fill	Fill
Date of Sampling	CONCENTRATION			24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	1.0-1.2	2.0-2.2	0.0-0.2	1.8-2.2	1.0-1.2	1.3-1.7	1.0-1.2	3.8-4.0
HEAVY METALS											
Arsenic	20 [3]	200 [1]	500 [2]	5	<5	5	<5	6	<5	<5	<5
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	400 [3]	24% [1]	60% [2]	20	<5	23	<5	18	12	9	<5
Copper	100 [3]	2000 [1]	5000 [2]	25	<5	26	<5	31	14	17	<5
Nickel	60 [3]	600 [1]	3000 [2]	7	<2	9	<2	8	16	5	2
Lead	600 [3]	600 [1]	1500 [2]	150	9	77	<5	82	31	62	90
Zinc	200 [3]	14000 [1]	35000 [2]	94	10	98	<5	84	74	67	39
Mercury	1 [3]	30 [1]	75 [2]	0.24	0.06	0.1	<0.05	0.33	0.07	0.08	<0.05
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C14 Fraction				<10	<10	<10	<10	<10	<10	<10	<10
C15 - C28 Fraction				70	<50	<50	<50	<50	<50	60	<50
C29 - C36 Fraction				<50	<50	<50	<50	<50	<50	<50	<50
Total C10-C36		1000 [4]	1000 [4]	70	ND	ND	ND	ND	ND	60	ND
BTEX											
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	<3	<3	<3	<3
POLYCYCLIC AROMATIC HYDROCARBONS											
Naphthalene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene				0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene				1	<0.5	<0.5	<0.5	<0.5	0.7	0.5	<0.5
Pyrene				1	<0.5	<0.5	<0.5	<0.5	0.8	0.6	0.6
Benz(a)anthracene				0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene				0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene				1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene		2 [1]	5 [2]	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
I<0.5eno(1.2.3.cd)pyrene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH		40 [1]	100 [2]	5.6	ND	ND	ND	ND	1.5	1.1	0.6
VOLATILE ORGANIC COMPOUNDS						-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES											
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	ND	-	-	-	-	-
Chlordane		100 [1]	250 [2]	-	-	ND	-	-	-	-	-
Other OCPs				-	-	ND	-	-	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	ND	-	-	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	ND	-	ND	-	-	-
ACID SULPHATE SOILS											
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR4
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR SOIL
AREA D
All results in mg/kg

Sample ID_Depth(m)				CTP18	CTP18	CTP19	CTP19	PACM CTP1	PACM CTP17
Geological Origin	THRESHOLD			Fill	Fill	Fill	Fill	Fibro	Fibro
Date of Sampling	CONCENTRATION			24-Mar-05	24-Mar-05	24-Mar-05	24-Mar-05	22-Mar-05	24-Mar-05
Depth (m)	Phytotox	Open Space	Commercial	0.0-0.2	1.0-1.2	0.2-0.4	1.0-1.3	1	1.7
HEAVY METALS									
Arsenic	20 [3]	200 [1]	500 [2]	<5	<5	<5	<5	-	-
Cadmium	3 [3]	40 [1]	100 [2]	<0.5	<0.5	<0.5	<0.5	-	-
Chromium	400 [3]	24% [1]	60% [2]	7	11	5	15	-	-
Copper	100 [3]	2000 [1]	5000 [2]	10	14	7	17	-	-
Nickel	60 [3]	600 [1]	3000 [2]	8	9	<2	25	-	-
Lead	600 [3]	600 [1]	1500 [2]	37	38	54	14	-	-
Zinc	200 [3]	14000 [1]	35000 [2]	50	77	33	48	-	-
Mercury	1 [3]	30 [1]	75 [2]	0.06	<0.05	<0.05	<0.05	-	-
TOTAL PETROLEUM HYDROCARBONS									
C6 - C9 Fraction		65 [4]	65 [4]	<5	<5	<5	<5	-	-
C10 - C14 Fraction				<10	<10	<10	<10	-	-
C15 - C28 Fraction				<50	50	160	50	-	-
C29 - C36 Fraction				<50	<50	50	<50	-	-
Total C10-C36		1000 [4]	1000 [4]	ND	50	210	50	-	-
BTEX									
Benzene		1 [4]	1 [4]	<0.2	<0.2	<0.2	<0.2	-	-
Toluene	1.4 [4]	130 [4]	130 [4]	<1	<1	<1	<1	-	-
Ethylbenzene	3.1 [4]	50 [4]	50 [4]	<1	<1	<1	<1	-	-
Total Xylene	14 [4]	25 [4]	25 [4]	<3	<3	<3	<3	-	-
POLYCYCLIC AROMATIC HYDROCARBONS									
Naphthalene				<0.5	<0.5	<0.5	<0.5	-	-
Acenaphthylene				<0.5	<0.5	<0.5	<0.5	-	-
Acenaphthene				<0.5	<0.5	<0.5	<0.5	-	-
Fluorene				<0.5	<0.5	<0.5	<0.5	-	-
Phenanthrene				<0.5	<0.5	1.4	<0.5	-	-
Anthracene				<0.5	<0.5	<0.5	<0.5	-	-
Fluoranthene				0.8	1.2	2.6	<0.5	-	-
Pyrene				1	1.4	2.6	<0.5	-	-
Benz(a)anthracene				0.5	0.9	1	<0.5	-	-
Chrysene				0.5	0.8	1	<0.5	-	-
Benzo(b)&(k)fluoranthene				1	1	2	<1	-	-
Benzo(a)pyrene		2 [1]	5 [2]	0.6	0.8	1	<0.5	-	-
I<0.5eno(1.2.3.cd)pyrene				0.6	0.7	0.7	<0.5	-	-
Dibenz(a.h)anthracene				<0.5	<0.5	<0.5	<0.5	-	-
Benzo(g.h.i)perylene				<0.5	0.6	0.6	<0.5	-	-
Total PAH		40 [1]	100 [2]	5	7.4	12.9	ND	-	-
VOLATILE ORGANIC COMPOUNDS				-	-	-	-	-	-
ORGANOCHLORINE PESTICIDES									
DDD + DDE + DDT		400 [1]	1000 [2]	-	-	ND	-	-	-
Chlordane		100 [1]	250 [2]	-	-	ND	-	-	-
Other OCPs				-	-	ND	-	-	-
ORGANOPHOSPHOROUS PESTICIDES				-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS		20 [1]	50 [2]	-	-	ND	-	-	-
ASBESTOS		ND [5]	ND [5]	ND	-	-	-	ND	*
ACID SULPHATE SOILS									
Peroxide Oxidisable Sulfur (%)		0.03 [6]		-	-	-	-	-	-
ph (KCl)		4.5 [6]		-	-	-	-	-	-
pH (ox) Peroxide Extract		3 [6]		-	-	-	-	-	-
Total Actual Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-
Total Potential Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-
Total Sulfidic Acidity (mol H+/t)		18 [6]		-	-	-	-	-	-

Notes:
Concentration exceeds phytotoxicity based threshold concentration
Concentration exceeds the open space based threshold concentration
Concentration exceeds the commercial based threshold concentration
Concentration exceeds the ASSM <1000 tonnes guideline for coarse textured soils

1 Based on the Health Based Soil Investigation Level in Column 3 of the NSW EPA (1998) Auditor Guidelines
2 Based on the Health Based Soil Investigation Level in Column 4 of the NSW EPA (1998) Auditor Guidelines
3 Based on the Phytotoxicity Based Soil Investigation Level in Column 5 of the NSW EPA (1998) Auditor Guidelines
4 Based on NSW EPA (1994) Guidelines for Assessing Service Station Sites
5 NSW EPA advice is that there should be no asbestos in surface soil
6 ASSM <1000 tonnes guideline for coarse textured soils
ND ND Not Detected
- Not Analysed
* Analysis requested but not completed by the laboratory
# Soil Results for CTP13 0.4-0.6 were replaced with the results of DUP D18. CTP13 0.4-0.6 are presented in the Area D soil QA/QC tables.

E12723/4 - AW
05/08/2005

TABLE LR5
SUMMARY OF PHASE 1 LABORATORY RESULTS FOR GROUNDWATER
AREA D
All results in ug/L

Sample ID	THRESHOLD CONCENTRATION		MW1	MW2	MW3	MW4	MW5
			groundwater	groundwater	groundwater	groundwater	groundwater
Date of Sampling	Aquatic	Drinking	5-Nov-04	5-Nov-04	5-Nov-04	5-Nov-04	5-Nov-04
HEAVY METALS							
Arsenic	2.3 [1,4]	7 [5]	5	1	<1	<1	<1
Cadmium	0.7 [1a]	2 [5]	<0.1	<0.1	<0.1	0.2	<0.1
Chromium	4.4 [1,2]	50 [5,2]	<1	1	1	<1	1
Copper	1.3 [1]	2000 [5]	<1	<1	2	6	2
Nickel	7 [1a]	20 [5]	<3	1	<1	2	<1
Lead	4.4 [1]	10 [5]	<1	<1	<1	<1	<1
Zinc	15 [1]	3000 [5]	117	4	8	51	8
Mercury	0.1 [1a]	1 [5]	<1	<1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS							
C6 - C9 Fraction			<20	<20	<20	<20	<20
C10 - C14 Fraction			<20	<20	<20	<20	<20
C15 - C28 Fraction			<100	<100	<100	<100	<100
C29 - C36 Fraction			<100	<100	<100	<100	<100
Total C10-C36	325 [3]	325 [3]	ND	ND	ND	ND	ND
BTEX							
Benzene	700 [1]	1 [5]	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	180 [1,4]	800 [5]	2	2	2	1	<1
Ethylbenzene	5 [1,4]	300 [5]	<1	<1	<1	<1	<1
Total Xylene	350 [1,4]	600 [5]	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS			ND	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS			ND	ND	ND	ND	ND

NOTES:

Concentration exceeds the respective criteria

[1] Based on the ANZECC (2000) Trigger Values for Marine Water (95% Protection of Species)

[1a] Based on the ANZECC (2000) Trigger Values for Marine Water (99% Protection of Species)

[2] Criteria for Chromium VI

[3] Based on Dutch (1994) Average Bewteen Intervention and Target Levels for Mineral Oils

[4] Low reliability trigger values

[5] Based on NHMRC (1996) Australian Drinking Water Guidelines

\- Not Analysed

ND Not Detected

E12723/4 - AW
05/08/2005

TABLE LR6
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR GROUNDWATER
AREA B
All results in µg/L

Sample ID	THRESHOLD			MW7	MW8	MW9	MW10
Geological Origin	CONCENTRATION		PQL	WATER	WATER	WATER	WATER
Date of Sampling				23/03/2005	23/03/2005	23/03/2005	23/03/2005
Depth (m)	Aquatic	Drinking					
HEAVY METALS							
Arsenic	2	7 [2]	1	8	2	1	<1
Cadmium	0.7 [1]	2 [2]	0.1	1	0.3	<0.1	<0.1
Chromium	4 [1]	50 [2]	1	1	4	1	2
Copper	1.3 [1]	2000 [2]	1	<1	<1	1	<1
Nickel	7 [1]	20 [2]	1	18	5	<1	2
Lead	4.4 [1]	10 [2]	1	26	9	21	<1
Zinc	2 [1]		2	38	36	10	28
Mercury	0.1 [1]	1 [2]	1	<1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS							
C6 - C9 Fraction			20	<20	60	20	70
C10 - C14 Fraction			20	<20	40	<20	260
C15 - C28 Fraction			100	<100	<100	<100	<100
C29 - C36 Fraction			100	<100	<100	<100	<100
Total C6-C36	325 [3]	325 [3]	240	ND	100	20	330
BTEX							
Benzene	700 [1]	1 [2]	0.5	<0.5	49	<0.5	<0.5
Toluene	180 [4]	800 [2]	1	<1	<1	<1	<1
Ethylbenzene	5 [4]	300 [2]	1	<1	<1	<1	9
m&p-Xylene	275 [4]	600 [2]	2	<2	<2	<2	<2
o-Xylene	350 [4]		1	<1	<1	<1	3
POLYCYCLIC AROMATIC HYDROCARBONS							
Naphthalene	70 [1]		1	<1	3	<1	65
Acenaphthylene			1	<1	<1	<1	<1
Acenaphthene			1	<1	5	<1	9
Fluorene			1	<1	1	<1	<1
Phenanthrene	0.6 [4]		1	<1	<1	<1	<1
Anthracene	0.01 [4]		1	<1	<1	<1	<1
Fluoranthene	1 [4]		1	<1	<1	<1	<1
Pyrene			1	<1	<1	<1	<1
Benzo(a)anthracene			1	<1	<1	<1	<1
Chrysene			1	<1	<1	<1	<1
Benzo(b & k)fluoranthene			2	<2	<2	<2	<2
Benzo(a)pyrene	0.1 [4]	0.001 [2]	1	<1	<1	<1	<1
Indeno(1.2.3.cd)pyrene			1	<1	<1	<1	<1
Dibenz(a.h)anthracene			1	<1	<1	<1	<1
Benzo(g.h.i)perylene			1	<1	<1	<1	<1
Total PAH			1	<1	9	<1	74

NOTES:

Concentration exceeds the respective threshold concentration

[1] Based on ANZECC (2000) Marine Water Guidelines for protection of 95% species

[2] Based on NHMRC (1996) Australian Drinking Water Guidelines

[3] Dutch (1999) guideline levels for Mineral Oils

[4] Based on the ANZECC (2000) low reliability values

- Not Analysed

ND Not Detected

E12723/4 - AW
05/08/2005

TABLE LR7
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR GROUNDWATER
AREA D
All results in µg/L

Sample ID	THRESHOLD			MW1	MW2	MW3	MW4	MW5
Geological Origin	CONCENTRATION		PQL	WATER	WATER	WATER	WATER	WATER
Date of Sampling				22/03/2005	22/03/2005	23/03/2005	23/03/2005	22/03/2005
Depth (m)	Aquatic	Drinking						
HEAVY METALS								
Arsenic	2 [1]	7 [2]	2	8	8	2	<2	4
Cadmium	0.7 [1]	2 [2]	0.5	<0.5	<0.5	0.1	<0.5	<0.5
Chromium	4 [1]	50 [2]	5	6	<5	<5	<5	<5
Copper	1.3 [1]	2000 [2]	5	<5	11	6	<5	<5
Nickel	7 [1]	20 [2]	5	<5	<5	2	<5	<5
Lead	4.4 [1]	10 [2]	2	67	15	<2	<2	2
Zinc	15 [1]	3000 [2]	10	80	40	56	15	<10
Mercury	0.1 [1]	1 [2]	1	<1	<1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS								
C6 - C9 Fraction			20	<20	<20	30	<20	<20
C10 - C14 Fraction			20	<20	<20	<20	<20	<20
C15 - C28 Fraction			100	246	<100	<100	<100	<100
C29 - C36 Fraction			100	187	<100	<100	<100	<100
Total C6-C36	325 [3]	325 [3]		433	ND	ND	ND	ND
BTEX								
Benzene	700 [1]	1 [2]	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	180 [5]	800 [2]	1	<1	<1	<1	<1	<1
Ethylbenzene	5 [5]	300 [2]	1	<1	<1	<1	<1	<1
m&p-Xylene	200 [5]	600 [2]	2	<2	<2	<2	<2	<2
o-Xylene			1	<1	<1	<1	<1	<1
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene	70 [1]		1	<1	<1	<1	<1	<1
Acenaphthylene			1	<1	<1	<1	<1	<1
Acenaphthene			1	<1	<1	<1	<1	<1
Fluorene			1	<1	<1	<1	<1	<1
Phenanthrene	0.6 [5]		1	<1	<1	<1	<1	<1
Anthracene	0.01 [5]		1	<1	<1	<1	<1	<1
Fluoranthene	1 [5]		1	<1	<1	<1	<1	<1
Pyrene			1	<1	<1	<1	<1	<1
Benz(a)anthracene			1	<1	<1	<1	<1	<1
Chrysene			1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene&Benzo(k)fluoranthene			2	<2	<2	<2	<2	<2
Benzo(a)pyrene	0.1 [5]	0.001 [2]	1	<1	<1	<1	<1	<1
Indeno(1.2.3.cd)pyrene			1	<1	<1	<1	<1	<1
Dibenz(a.h)anthracene			1	<1	<1	<1	<1	<1
Benzo(g.h.i)perylene			1	<1	<1	<1	<1	<1
Total PAH			1	<1	<1	<1	<1	<1
NITROGEN COMPOUNDS								
Ammonia as N (mg/L)	0.015-0.020 [4]		0.01	1	<0.01	0.03	1.45	0.06
Nitrite as N (mg/L)	0.005-0.025 [4]		0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nitrate as N (mg/L)	0.005-0.025 [4]		0.02	<0.02	5.13	<0.02	<0.02	3.46
Total Nitrogen (mg/L)	0.12 [4]		0.1	6.6	6.6	0.03	1.4	5.4
Total Kjeldahl as N (mg/L)			0.1	6.6	1.4	0.03	1.4	2
TOTAL PHOSPHORUS								
Total Phosphorus (mg/L)	0.025 [5]		0.02	0.45	0.27	<0.02	0.27	0.02

NOTES:

Concentration exceeds the respective threshold concentration

[1] Based on ANZECC (2000) Marine Water Guidelines for protection of 95% species

[2] Based on NHMRC (1996) Australian Drinking Water Guidelines

[3] Dutch (1999) guideline levels for Mineral Oils

[4] Based on the ANZECC (2000) Marine Water Guidelines Default Trigger Values for South Eastern Australia (95% species)

[5] Based on the ANZECC (2000) low reliability values

- Not Analysed

ND Not Detected

E12723/4 - AW
05/08/2005

TABLE LR7
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR GROUNDWATER
AREA D
All results in µg/L

Sample ID	THRESHOLD			MW11	MW13	MW14
Geological Origin	CONCENTRATION		PQL	WATER	WATER	WATER
Date of Sampling				22/03/2005	23/03/2005	22/03/2005
Depth (m)	Aquatic	Drinking				
HEAVY METALS						
Arsenic	2 [1]	7 [2]	2	3	2	4
Cadmium	0.7 [1]	2 [2]	0.5	<0.5	<0.5	<0.5
Chromium	4 [1]	50 [2]	5	<5	1	<5
Copper	1.3 [1]	2000 [2]	5	<5	<5	<5
Nickel	7 [1]	20 [2]	5	7	<5	<5
Lead	4.4 [1]	10 [2]	2	30	<2	9
Zinc	15 [1]	3000 [2]	10	730	7	10
Mercury	0.1 [1]	1 [2]	1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction			20	<20	<20	<20
C10 - C14 Fraction			20	<20	<20	<20
C15 - C28 Fraction			100	<100	<100	<100
C29 - C36 Fraction			100	<100	<100	<100
Total C6-C36	325 [3]	325 [3]		ND	ND	ND
BTEX						
Benzene	700 [1]	1 [2]	0.5	<0.5	<0.5	<0.5
Toluene	180 [5]	800 [2]	1	<1	<1	<1
Ethylbenzene	5 [5]	300 [2]	1	<1	<1	<1
m&p-Xylene	200 [5]	600 [2]	2	<2	<2	<2
o-Xylene			1	<1	<1	<1
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	70 [1]		1	<1	<1	<1
Acenaphthylene			1	<1	<1	<1
Acenaphthene			1	<1	<1	<1
Fluorene			1	<1	<1	<1
Phenanthrene	0.6 [5]		1	<1	<1	<1
Anthracene	0.01 [5]		1	<1	<1	<1
Fluoranthene	1 [5]		1	<1	<1	<1
Pyrene			1	<1	<1	<1
Benz(a)anthracene			1	<1	<1	<1
Chrysene			1	<1	<1	<1
Benzo(b)fluoranthene&Benzo(k)fluoranthene			2	<2	<2	<2
Benzo(a)pyrene	0.1 [5]	0.001 [2]	1	<1	<1	<1
Indeno(1.2.3.cd)pyrene			1	<1	<1	<1
Dibenz(a.h)anthracene			1	<1	<1	<1
Benzo(g.h.i)perylene			1	<1	<1	<1
Total PAH			1	<1	<1	<1
NITROGEN COMPOUNDS						
Ammonia as N (mg/L)	0.015-0.020 [4]		0.01	0.06	4.15	1.14
Nitrite as N (mg/L)	0.005-0.025 [4]		0.02	<0.02	<0.02	<0.02
Nitrate as N (mg/L)	0.005-0.025 [4]		0.02	<0.02	<0.02	<0.02
Total Nitrogen (mg/L)	0.12 [4]		0.1	5	6.2	2.6
Total Kjeldahl as N (mg/L)			0.1	5	6.2	2.6
TOTAL PHOSPHORUS						
Total Phosphorus (mg/L)	0.025 [5]		0.02	0.61	0.18	0.13

NOTES:

Concentration exceeds the respective threshold concentration

[1] Based on ANZECC (2000) Marine Water Guidelines for protection of 95

[2] Based on NHMRC (1996) Australian Drinking Water Guidelines

[3] Dutch (1999) guideline levels for Mineral Oils

[4] Based on the ANZECC (2000) Marine Water Guidelines Default Trigger

[5] Based on the ANZECC (2000) low reliability values

\- Not Analysed

ND Not Detected

E12723/4-AQ
19/04/2005

TABLE LR8
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR GROUNDWATER - JUNE 2005
AREA D
All results in µg/L

Sample ID	THRESHOLD			MW1	MW2	MW3	MW4	MW5
Geological Origin	CONCENTRATION		PQL	WATER	WATER	WATER	WATER	WATER
Date of Sampling				29/06/2005	29/06/2005	29/06/2005	29/06/2005	29/06/2005
	Aquatic	Drinking						
HEAVY METALS								
Arsenic	2 [1]	7 [2]	1	1	6	<1	<1	<1
Cadmium	0.7 [1]	2 [2]	0.1	<0.1	<0.1	<0.1	<0.1	0.2
Chromium	4 [1]	50 [2]	1	1	<1	<1	<1	<1
Copper	1.3 [1]	2000 [2]	1	<1	<1	<1	<1	<1
Nickel	7 [1]	20 [2]	1	<1	1	2	<1	2
Lead	4.4 [1]	10 [2]	1	<1	1	<1	<1	<1
Zinc	15 [1]	3000 [2]	2	<2	44	318	3	359
Mercury	0.1 [1]	1 [2]	1	<1	<1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS								
C6 - C9 Fraction			20	<20	<20	<20	<20	<20
C10 - C14 Fraction			20	<20	<20	<20	<20	<20
C15 - C28 Fraction			100	<100	<100	<100	<100	<100
C29 - C36 Fraction			100	<100	<100	<100	<100	<100
Total C6-C36	325 [3]	325 [3]		ND	ND	ND	ND	ND
BTEX								
Benzene	700 [1]	1 [2]	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	180 [5]	800 [2]	1	<1	<1	<1	<1	<1
Ethylbenzene	5 [5]	300 [2]	1	<1	<1	<1	<1	<1
m&p-Xylene	200 [5]	600 [2]	2	<2	<2	<2	<2	<2
o-Xylene			1	<1	<1	<1	<1	<1
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene	70 [1]		1	<1	<1	<1	<1	<1
Acenaphthylene			1	<1	<1	<1	<1	<1
Acenaphthene			1	<1	<1	<1	<1	<1
Fluorene			1	<1	<1	<1	<1	<1
Phenanthrene	0.6 [6]		1	<1	<1	<1	<1	<1
Anthracene	0.01 [6]		1	<1	<1	<1	<1	<1
Fluoranthene	1 [6]		1	<1	<1	<1	<1	<1
Pyrene			1	<1	<1	<1	<1	<1
Benz(a)anthracene			1	<1	<1	<1	<1	<1
Chrysene			1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene&Benzo(k)fluoranthene			2	<2	<2	<2	<2	<2
Benzo(a)pyrene	0.1 [6]	0.001 [2]	1	<1	<1	<1	<1	<1
Indeno(1.2.3.cd)pyrene			1	<1	<1	<1	<1	<1
Dibenz(a.h)anthracene			1	<1	<1	<1	<1	<1
Benzo(g.h.i)perylene			1	<1	<1	<1	<1	<1
Total PAH			1	<1	<1	<1	<1	<1
NITROGEN COMPOUNDS								
Ammonia as N (mg/L)	0.015-0.020 [5]	0.4 [2]	0.01	8.74	0.06	0.03	1.62	0.04
Nitrite as N (mg/L)	0.005-0.025 [5]		0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nitrate as N (mg/L)	0.005-0.025 [5]	11 [2]	0.02	<0.02	0.07	<0.02	<0.02	<0.02
Total Nitrogen (mg/L)	0.12 [5]		0.1	6.8	0.2	0.2	2.8	0.2
Total Kjeldahl as N (mg/L)			0.1	6.8	0.2	0.1	2.8	0.2
TOTAL PHOSPHORUS								
Total Phosphorus (mg/L)	0.025 [5]		0.02	<0.02	0.05	<0.02	0.14	<0.02

NOTES:

Concentration exceeds the respective threshold concentration

[1] Based on ANZECC (2000) Marine Water Guidelines for protection of 95% species

[2] Based on NHMRC (1996) Australian Drinking Water Guidelines

[3] Dutch (1999) guideline levels for Mineral Oils

[4] Based on the ANZECC (2000) Marine Water Guidelines Default Trigger Values for South Eastern Australia (95% species)

[5] Based on the ANZECC (2000) Marine Physical Stresses Trigger Values

[6] Based on the ANZECC (2000) low reliability values

\- Not Analysed

ND Not Detected

E12723/4-AQ
19/04/2005

TABLE LR8
SUMMARY OF PHASE 2 LABORATORY RESULTS FOR GROUNDWATER - JUNE
AREA D
All results in µg/L

Sample ID	THRESHOLD			MW11	MW12	MW13	MW14
Geological Origin	CONCENTRATION		PQL	WATER	WATER	WATER	WATER
Date of Sampling				29/06/2005	29/06/2005	29/06/2005	29/06/2005
	Aquatic	Drinking					
HEAVY METALS							
Arsenic	2 [1]	7 [2]	1	<1	<1	<1	3
Cadmium	0.7 [1]	2 [2]	0.1	0.1	0.2	<0.1	<0.1
Chromium	4 [1]	50 [2]	1	<1	<1	<1	1
Copper	1.3 [1]	2000 [2]	1	<1	<1	<1	<1
Nickel	7 [1]	20 [2]	1	2	2	2	<1
Lead	4.4 [1]	10 [2]	1	<1	<1	<1	<1
Zinc	15 [1]	3000 [2]	2	335	359	223	3
Mercury	0.1 [1]	1 [2]	1	<1	<1	<1	<1
TOTAL PETROLEUM HYDROCARBONS							
C6 - C9 Fraction			20	<20	<20	<20	<20
C10 - C14 Fraction			20	<20	<20	<20	<20
C15 - C28 Fraction			100	<100	<100	<100	<100
C29 - C36 Fraction			100	<100	<100	<100	<100
Total C6-C36	325 [3]	325 [3]		ND	ND	ND	ND
BTEX							
Benzene	700 [1]	1 [2]	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	180 [5]	800 [2]	1	<1	<1	<1	<1
Ethylbenzene	5 [5]	300 [2]	1	<1	<1	<1	<1
m&p-Xylene	200 [5]	600 [2]	2	<2	<2	<2	<2
o-Xylene			1	<1	<1	<1	<1
POLYCYCLIC AROMATIC HYDROCARBONS							
Naphthalene	70 [1]		1	<1	<1	<1	<1
Acenaphthylene			1	<1	<1	<1	<1
Acenaphthene			1	<1	<1	<1	<1
Fluorene			1	<1	<1	<1	<1
Phenanthrene	0.6 [6]		1	<1	<1	<1	<1
Anthracene	0.01 [6]		1	<1	<1	<1	<1
Fluoranthene	1 [6]		1	<1	<1	<1	<1
Pyrene			1	<1	<1	<1	<1
Benz(a)anthracene			1	<1	<1	<1	<1
Chrysene			1	<1	<1	<1	<1
Benzo(b)fluoranthene&Benzo(k)fluoranthene			2	<2	<2	<2	<2
Benzo(a)pyrene	0.1 [6]	0.001 [2]	1	<1	<1	<1	<1
Indeno(1.2.3.cd)pyrene			1	<1	<1	<1	<1
Dibenz(a.h)anthracene			1	<1	<1	<1	<1
Benzo(g.h.i)perylene			1	<1	<1	<1	<1
Total PAH			1	<1	<1	<1	<1
NITROGEN COMPOUNDS							
Ammonia as N (mg/L)	0.015-0.020 [5]	0.4 [2]	0.01	0.03	0.04	0.04	0.57
Nitrite as N (mg/L)	0.005-0.025 [5]		0.02	<0.02	<0.02	<0.02	<0.02
Nitrate as N (mg/L)	0.005-0.025 [5]	11 [2]	0.02	<0.02	<0.02	<0.02	<0.02
Total Nitrogen (mg/L)	0.12 [5]		0.1	0.2	0.2	0.2	1.6
Total Kjeldahl as N (mg/L)			0.1	0.2	0.2	0.2	1.6
TOTAL PHOSPHORUS							
Total Phosphorus (mg/L)	0.025 [5]		0.02	<0.02	<0.02	<0.02	<0.02

NOTES:

Concentration exceeds the respective threshold concentration

[1] Based on ANZECC (2000) Marine Water Guidelines for protection of 95%

[2] Based on NHMRC (1996) Australian Drinking Water Guidelines

[3] Dutch (1999) guideline levels for Mineral Oils

[4] Based on the ANZECC (2000) Marine Water Guidelines Default Trigger V

[5] Based on the ANZECC (2000) Marine *Physical Stresses Trigger Values*

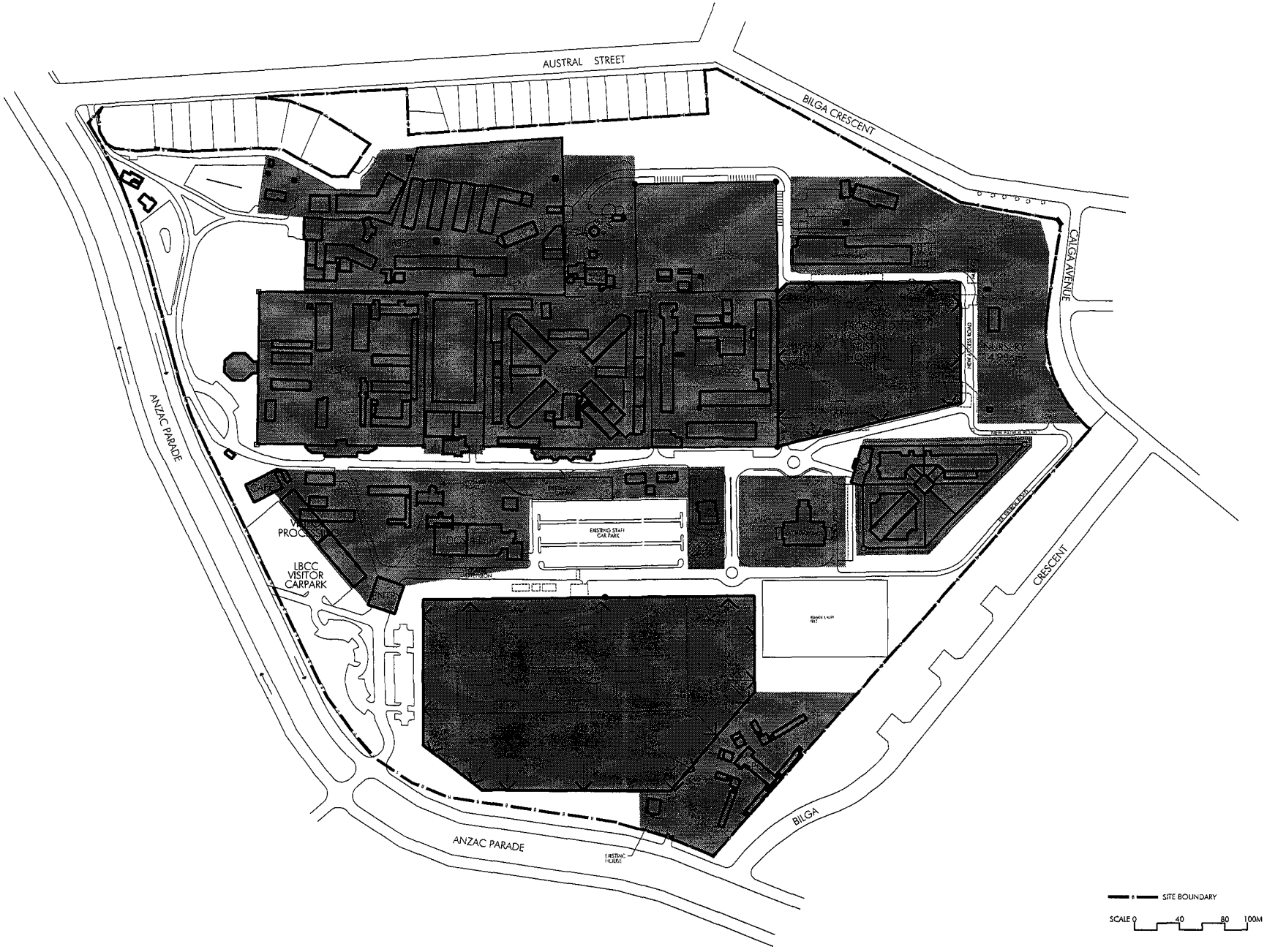
[6] Based on the ANZECC (2000) low reliability values

\- Not Analysed

ND Not Detected

APPENDIX A

MASTERPLAN



LEGEND

- INMATE ACCOMMODATION & PROGRAM ZONES
- HOSPITAL ZONE
- INDUSTRIES, MAINTENANCE, STORES & SUPPORT ZONES
- STAFF AMENITIES
- MAIN ENTRY & ADMINISTRATION
- EXISTING BUILDINGS ON PROPOSED LONG BAY PRISON HOSPITAL + FORENSIC HOSPITAL SITES
- REQUIRED AREA FOR PROPOSED LONG BAY PRISON HOSPITAL + FORENSIC HOSPITAL BOUNDARIES

LONG BAY CORRECTIONAL COMPLEX

MASTER PLAN

DRAWING TITLE

MASTER PLAN

Figure 10: Land Use Distribution

DATE

AUGUST 2004

DRAWING No

LB - MP_10

GOVERNMENT ARCHITECT'S OFFICE
CHRIS JOHNSON
GOVERNMENT ARCHITECT
LEVEL 15, McELL BUILDING
24 RAWSON PLACE
SYDNEY, NSW 1070
AUSTRALIA

NSW DEPARTMENT OF CORRECTIVE SERVICES

NSW Department of Commerce

APPENDIX B1

BOREHOLE TEST PIT AND HAND AUGER LOGS

PHASE 1 INVESTIGATION NOVEMBER 2004

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH8**

Engineering Log - Borehole

Sheet 1 of 2

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***25.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***25.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD/MM***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 41.9

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
V BIT		N		E					**ASPHALT:** 200mm thick.	D			PAVEMENT MATERIALS
									SANDY GRAVEL: Fine to medium grained, dark grey brown, fine to medium grained sand.	D			
					41	1		SP	**SAND:** Fine to medium grained, pale grey brown, low plasticity clay (<5%).	M	L-MD		AEOLIAN SANDS OR BEACH DEPOSIT
				SPT 5,5,5 N*=10									Environmental sample from 1m to 1.2m.
					40	2			becoming dark grey brown.				
			►	SPT 15,25,- N*=R	39	3			becoming dark brown.	W	VD		Environmental sample from 2.5m to 2.7m. V Bit Refusal at 3m on Sandstone.
									Borehole CBH8 continued as cored hole				
					38	4							
					37	5							
					36	6							
					35	7							
					34	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH8**

Sheet 2 of 2

Office Job No.: **E12723/03**

Engineering Log - Cored Borehole

Client: ***NSW Department Of Commerce***

Date started: ***25.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***25.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD/MM***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 41.9

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: - | datum: AHD

drilling information | **material substance** | **rock mass defects**

method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength (VL L M H VH EH)	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination, planarity, roughness, coating, thickness (particular / general)
			41	1								
			40	2								
		▶	39	3		Continued from non-cored borehole						
						SANDSTONE: Medium grained, banded pale grey and orange brown.	HW					
						NO CORE: 3.12-3.3m.	HW / MW					
			38	4		**SANDSTONE:** Medium grained, banded pale grey and orange brown, indistinct bedding at 20°.			D 0.17 A 0.27			
						becoming pale grey banded grey and pale brown, distinctly cross bedding at 0° to 20°.						SM, 10°, PL, RO, carbonaceous CO, 1mm.
			37	5					D 1.51 A 2.07	80		SM, 0°, PL, sandy clay, 4mm. PT, 0°-20°, PL, RO, clay VN.
						trace of carbonaceous flecks.						SM, 5°, PL, sandy clay, 3mm.
			36	6					D 1.02 A 1.59			SM, 10°, IR, carbonaceous, 4-2mm. PT, 0°, PL, carbonaceous CO, 1mm.
						CBH8 terminated at 6m						
			35	7								
			34	8								

CORED BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

roughness
VR very rough
RO rough
SO smooth
SL slickensided

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

coating
CN clean
SN stained
VN veneer
CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH25**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 40.8

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	40.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey-black, low plasticity clay.	M			FILL
					40.0	1.0		SP	**SAND:** Fine to medium grained, pale grey-brown, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.3m environmental sample.
				SPT 5,5,9 N*=14	39.5	1.5		SP	**SAND:** Fine to medium grained, yellow-pale grey, low plasticity clay (<5%).		MD		From 2-2.2m environmental sample.
					39.0	2.0							
					38.5	2.5			Borehole CBH25 terminated at 2.25m				
					38.0	3.0							
					37.5	3.5							
					37.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH26**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 39.9

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	39.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey, low plasticity clay.	M			FILL
				E	39.0	1.0		SP	**SAND:** Fine to medium grained, pale brown, low plasticity clay (<5%).	W	L		AEOLIAN DUNE OR BEACH DEPOSIT
									Borehole CBH26 terminated at 1m				
					38.5	1.5							
					38.0	2.0							
					37.5	2.5							
					37.0	3.0							
					36.5	3.5							
					36.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering Log - Borehole

Borehole No. **CBH27**

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 41.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE:**150mm thick.				PAVEMENT MATERIAL
V BIT				E					**FILL: CLAYEY SAND:** Fine to coarse grained, brown, low plasticity clay.	D			FILL
					41.0	0.5		SP	**SAND:** Fine to medium grained, mottled yellow brown and dark brown, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 5,5,9 N*=14	40.5	1.0							From 1-1.3m environmental sample.
					40.0	1.5							
			▶	E(D)				SP	**SAND:** Fine to medium grained, pale grey brown, low plasticity clay (<5%).				
					39.5	2.0			Borehole CBH27 terminated at 1.9m				
					39.0	2.5							
					38.5	3.0							
					38.0	3.5							
					37.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH28**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 42.8

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE:** 150mm thick.				PAVEMENT MATERIALS
V BIT				E	42.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, brown-orange brown, low plasticity clay. Traces of gravel fines (<5%).	M			FILL
					42.0	1.0		SP	**SAND:** Fine to medium grained, yellow and pale grey brown, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.2m environmental sample.
			None observed	SPT 5,5,7 N*=12	41.5	1.5							
					41.0	2.0		CH	**SILTY CLAY:** Medium to high plasticity, pale grey-pale yellow, low liquid limit silt.		H		RESIDUAL
				SPT 25/100mm N*=R	40.5	2.5							From 2-2.6m environmental sample.
					40.0	3.0							
					39.5	3.5		SM	**SILTY CLAY:** Medium to high plasticity clay, pale yellow to pale grey, low liquid limit silt.		VSt		
				E	39.0	4.0			Borehole CBH28 terminated at 3.5m. Refusal on sandstone. Borehole CBH28 terminated at 3.5m				

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH29**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 42.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE:** 200mm thick.				PAVEMENT MATERIALS
V BIT				E	42.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey, low plasticity clay, waste building materials ie pieces crushed brick and gravel (<5%).	M			FILL
				SPT 5,7,10 N*=17	41.5	1.0		SP	**SAND:** Fine to medium grained, orange-brown and dark brown, low plasticity clay (<5%), mild hydrocarbon odour.		L		AEOLIAN DUNE OR BEACH DEPOSIT NB: Oil film on inner layer of bag. From 1-1.3m environmental sample.
			▶		41.0	1.5			Borehole CBH29 terminated at 1.45m				
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH30**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

Coffey

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 41.4

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N			41.0 / 0.5			**CONCRETE:** 150mm thick.	D			PAVEMENT MATERIAL
V BIT				E				**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey-black, low plasticity clay.	M			FILL
				SPT 5,7,7 N*=14	40.5 / 1.0		SP	**SAND:** Fine to medium grained, pale grey and dark grey, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.3m environmental sample.
			►		40.0 / 1.5							
				E	39.5 / 2.0		SP	**SAND:** Fine to medium grained, pale grey and dark grey, low plasticity clay (<5%).	W			
								Borehole CBH30 terminated at 2m				
					39.0 / 2.5							
					38.5 / 3.0							
					38.0 / 3.5							
					37.5 / 4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH31***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 42.6

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N			42.5				**CONCRETE:** 200mm thick.				PAVEMENT MATERIAL
V BIT			None observed	E					**FILL: CLAYEY SAND:** Fine to coarse grained, brown, low plasticity clay.	M			FILL
					42.0	0.5		SP	**SAND:** Fine to medium grained, pale yellow-grey, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				E		1.0			Borehole CBH31 terminated at 1m. Refusal on sandstone. Borehole CBH31 terminated at 1m				
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	*roller/tricone*
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH32**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***28.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***28.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 42.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
TC Bit		N		E					**FILL: CLAYEY SAND:** Fine to coarse grained, pale yellow brown and grey, low plasticity clay (<5%).	M			FILL
					42.0	0.5		SP	**SAND:** Fine to medium grained, pale grey-pale yellow, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
			▶		41.5	1.0							
				E									
					41.0	1.5			Borehole CBH32 terminated at 1.2m. Refusal on sandstone. Borehole CBH32 terminated at 1.2m				
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	*blank bit*
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering Log - Borehole

Borehole No. **CBH58**

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***1.11.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***1.11.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.8

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N	None observed						**CONCRETE:** 200mm thick.	D			PAVEMENT MATERIALS
V BIT				E	42.5			SP	**FILL: SAND:** Fine to coarse grained, pale grey and pale brown, low plasticity clay (<5%). Traces of gravel fines (<5%).	M			FILL
						0.5			Borehole CBH58 terminated at 0.3m. Refusal at 0.3m on unknown fill. Maybe crushed concrete?				
					42.0	1.0			Borehole CBH58 terminated at 0.3m				
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH59**

Sheet 1 of 1

Office Job No.: **E12723/03**

Engineering Log - Borehole

Client: ***NSW Department Of Commerce***

Date started: ***1.11.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***1.11.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.8

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	None observed						**CONCRETE:**200mm thick.				PAVEMENT MATERIALS
					42.5	0.5			Borehole CBH59 terminated at 0.2m. TC bit refusal at 0.2m on sandstone. Borehole CBH59 terminated at 0.2m				
					42.0	1.0							
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH60**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***1.11.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***1.11.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.9

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N	None observed						**CONCRETE:**200mm thick.				PAVEMENT MATERIALS
					42.5	0.5			Borehole CBH60 terminated at 0.2m. TC bit refusal at 0.2m on sandstone. Borehole CBH60 terminated at 0.2m				
					42.0	1.0							
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH61**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***1.11.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***1.11.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.1

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information							material substance					
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
TC Bit		N		E	42.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, grey brown, low plasticity clay.	M			FILL
			▶	E	41.5			SP	**SAND:** Fine to coarse grained, dark grey-black, low plasticity clay (<5%).	W			AEOLIAN SAND OR BEACH DEPOSIT
					41.0	1.0			Borehole CBH61 terminated at 0.9m due to H20 table. Borehole CBH61 terminated at 0.9m				
					40.5	1.5							
					40.0	2.0							
					39.5	2.5							
					39.0	3.0							
					38.5	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH62**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***1.11.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***1.11.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.9

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	None observed						**CONCRETE:** 200mm thick.	D			PAVEMENT MATERIALS
V BIT				E					**FILL: CLAYEY SAND:** Fine to medium grained, grey brown, low plasticity clay.	M			FILL
				E	42.5	0.5							
									Borehole CBH62 terminated at 0.5m. TC bit refusal on sandstone. Borehole CBH62 terminated at 0.5m				
					42.0	1.0							
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description *based on unified classification system*

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH63**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***2.11.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***2.11.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.7

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N	None observed		42.5				**CONCRETE:**	D			PAVEMENT MATERIALS
V BIT									**SANDSTONE:**	M			SANDSTONE
									Borehole CBH63 refusal at 0.25m on sandstone (no sample collected). Borehole CBH63 terminated at 0.25m				
					42.0	0.5							
					41.5	1.0							
					41.0	1.5							
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support: M mud, C casing, N nil

penetration: 1 2 3 4 — no resistance ranging to refusal

water: 10/1/98 water level on date shown; water inflow; water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	*vane shear (kPa)*
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description: based on unified classification system

moisture

D	dry
M	*moist*
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH64**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***2.11.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***2.11.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B*** Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 42.9

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	None observed						**CONCRETE:**200mm thick.	D			PAVEMENT MATERIALS
V BIT				E	42.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey brown, low plasticity clay.	M			FILL
					42.0	1.0			Borehole CBH64 terminated at 0.4m. Refusal at 0.4m on sandstone. Borehole CBH64 terminated at 0.4m				
					41.5	1.5							
					41.0	2.0							
					40.5	2.5							
					40.0	3.0							
					39.5	3.5							
					39.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH71**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***3.11.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***3.11.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area B***

Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 40.1

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E	40.0			SP	**FILL: SANDY GRAVEL:** Fine to medium grained, brown-pale grey, fine to coarse grained sand.	M	L		FILL
									SAND: Fine to medium grained, dark grey brown, low plasticity clay (<5%).				AEOLIAN DUNE OR BEACH DEPOSIT
						0.5		SP	**SAND:** Fine to medium grained, pale grey-pale brown, low plasticity clay (<5%).				
				E	39.5				Hand auger CBH71 terminated at 0.6m Borehole CBH71 terminated at 0.6m				
					39.0	1.0							
					38.5	1.5							
					38.0	2.0							
					37.5	2.5							
					37.0	3.0							
					36.5	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH72/MW6**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Piezometer

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

Coffey

drill model & mounting: FOXB40L TRUCK | Easting: | slope: -90° | R.L. Surface: 43.53

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
DT / ADT / STARTA PACK				E		43	1			**CONCRETE**: 200mm thick.			PAVEMENT MATERIALS
				E						**FILL** : GRAVELLY SAND, medium to coarse grained, dark grey/brown, fine to coarse grained gravel.	M		FILL
			23/3/05			42	2			**SANDSTONE**: fine to medium grained, pale grey, some fine to medium gravel.	W	VD	TC bit refusal. Sandstone logged from spoil material.
						41	3						
						40	4						
						39	5						Sandy clay band at 5.0m - 5.4m
						38	6						
						37	7			Borehole terminated at 6m			
						36	8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	*diatube*
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH73/MW8**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Piezometer

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

Coffey

drill model & mounting: FOXB40L TRUCK | Easting: | slope: -90° | R.L. Surface: 42.62

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT / STRATA PACK			23/3/05	E		42	1			**ASPHALT:** 100mm thick.	M		PAVEMENT MATERIALS
										FILL: GRAVELLY SAND, fine to coarse sand, dark grey/brown, fine to coarse gravel.			Roadbase and fill
						41	2			**SANDSTONE:** fine to medium grained, pale grey.	W	VD	Bedrock (Weathered)
						40	3						Sandstone logged from spoil material.
						39	4						Sandy clay bands at 1.5m-1.8m and 2.5m-2.8m
						38	5						
						37	6						
						36	7			Borehole terminated at 6m			
						35	8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH74/MW9**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

Coffey

drill model & mounting: FOXB40L TRUCK | Easting: | slope: -90° | R.L. Surface: 42.46

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT DT		N		E		42				**CONCRETE:** 150mm thick.			PAVEMENT MATERIALS
										FILL: SAND, fine to medium grained, pale yellow.	M		Fill
				E						**FILL:** GRAVELLY SAND, fine to medium grained, dark grey, fine to coarse gravel.			
STRATA PACK			23/3/05			41	1			**SANDSTONE:** fine to medium grained, pale yellow.		VD	TC bit refusal, bedrock. *Sandstone logged from spoil material* Void in fill/sandstone from 0.2-2.0m.
						40	2				W		
						39	3						
						38	4						
						37	5						
						36	6			Borehole terminated at 5.9m			
						35	7						
							8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 issue 3 Rev 0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH75***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 42.3

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED						**ASPHALT:** 100mm thick.				PAVEMENT MATERIAL
									FILL: SANDY GRAVEL: Fine to medium, blue/grey, fine to coarse sand.	D			Sub-base fill
				E	42.0	0.5			**FILL: SAND** Medium to coarse, pale brown.	M			
				SPT 6,R,R N*=R	41.5	1.0		SP	**SAND**: Fine and medium grained, brown to dark brown, some quartz, some organic content.		L		AEOLIAN SAND
								SW	**SAND**: Medium to coarse grained, pale yellow.		D		
					41.0	1.5			Borehole CBH75 terminated at 1m				
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH76**

Sheet 1 of 2

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Date started: ***11.3.2005***

Date completed: ***11.3.2005***

Logged by: ***SD/CW***

Checked by: ***MM***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 41.95

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N							**BASE COURSE: CONCRETE** 200mm thick.				PAVEMENT MATERIAL
ADT				E					**SUB BASE COURSE: GRAVELLY SAND:** Fine to coarse grained, dark grey/brown, gravel is sandstone.	M			
				SPT 1,R,R N*=R	41	1		SM	**SILTY SAND:** Fine to medium sand, black, with some organic matter and roots.		VD		AEOLIAN SAND TC Bit Refusal at 0.9m on Sandstone.
			NONE OBSERVED						Borehole CBH76 continued as cored hole				
					40	2							
					39	3							
					38	4							
					37	5							
					36	6							
					35	7							
					34	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH76**

Sheet 2 of 2

Engineering Log - Cored Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***11.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***SD/CW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***MM***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 41.95

hole diameter: 125 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance				rock mass defects		
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength (VL L M H VH EH)	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination, planarity, roughness, coating, thickness (particular / general)
						Continued from non-cored borehole						
		NONE OBSERVED	41	1		**SANDSTONE:** Coarse grained, pale grey and pale yellow brown, massive with some distinct laminations 0-20°.	MW/SW		D 0.77 A 0.78	98		JT, 20°,PL,RO,CN JT,70°,PL,RO,CN JT,65°,IR,VRO,CN PT, 0-5°,PL,RO,CN
			40	2								
			39	3		grading to medium grained, becoming grey, massive, trace of carbonaceous material.	FR		D 1.02 A 1.22			
			38	4		CBH76 terminated at 3.95m			D 0.76 A 0.89			
			37	5								
			36	6								
			35	7								
			34	8								

method
DT diatube; AS auger screwing; AD auger drilling; RR roller/tricone; CB claw or blade bit; NMLC NMLC core; NQ, HQ, PQ wireline core

core-lift
casing used; barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material; no core recovered

water
10/1/98 water level on date shown; water inflow; partial drill fluid loss; complete drill fluid loss; water pressure test result (lugeons) for depth interval shown (25)

weathering
FR fresh; SW slightly weathered; MW moderately weathered; HW highly weathered; XW extremely weathered; DW distinctly weathered (covers MW and HW)

strength
VL very low; L low; M medium; H high; VH very high; EH extremely high

defect type
JT joint; PT parting; SM seam; SZ sheared zone; SS sheared surface; CS crushed seam

planarity
PL planar; CU curved; UN undulating; ST stepped; IR irregular

roughness
VR very rough; RO rough; SO smooth; SL slickensided

coating
CN clean; SN stained; VN veneer; CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH77***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 42.0

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE**: 200mm thick.				PAVEMENT MATERIAL
ADT			NONE OBSERVED	E					**FILL**: GRAVELLY SAND, fine to medium grained, dark grey/brown, fine to medium gravel. Significant amounts of building material.	D			FILL
					41.5	0.5							Building waste observed from 0.35m-1.2m, pieces of sandstone/bricks/glass/metal/tiles.
				E									
					41.0	1.0							Refusal due to building waste materials
				E									
									TC Bit refusal. Borehole CBH77 terminated at 1.2m				
					40.5	1.5							
					40.0	2.0							
					39.5	2.5							
					39.0	3.0							
					38.5	3.5							
					38.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH79***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD Easting: slope: -90° R.L. Surface: 42.30

hole diameter: 125 mm Northing bearing: datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE:** 200mm thick.				PAVEMENT MATERIAL
ADT				E	42.0	0.5			**FILL: GRAVELLY SAND:** Fine to medium grained, dark grey, fine to medium gravel, trace of medium to high plasticity, mottled pale grey/yellow/brown Sandy Clay.	M			FILL
				SPT 5,2,1 N*=3	41.5	1.0		SW	**SAND:** Fine to medium grained, dark brown/black/dark red.		L		AEOLIAN SAND
					41.0	1.5			TC Bit refusal on sandstone. Borehole CBH79 terminated at 1.3m				
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Form GEO 5.3 Issue 3 Rev 2

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH80***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***16.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 42.60

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N			42.5				**CONCRETE**: 200mm thick.				PAVEMENT MATERIAL
ADT			NONE OBSERVED	E					**FILL: GRAVELLY SAND:** Fine to medium grained, dark grey/brown, fine to coarse gravel.	M			FILL
				SPT 6,4,1 N*=5	42.0	0.5							Piece of steel rio at 0.6m
					41.5	1.0							
				E				SP	**SAND:** Fine to medium grained, dark brown.		L		AEOLIAN SAND
					41.0	1.5			TC Bit refusal on sandstone. Borehole CBH80 terminated at 1.3m				
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH82**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 42.40

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information / material substance

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE**: 200mm thick.				PAVEMENT MATERIAL
ADT				E	42.0	0.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, brown, fine grained gravel.	M			FILL
									FILL: GRAVELLY SAND: Fine to medium grained, dark grey/grey, fine to medium grained gravel.				
				SPT 4,3,6 N*=9	41.5			SP	**SAND**: Fine to medium grained, pale yellow/brown/grey.		L		AEOLIAN SAND
						1.0			Borehole CBH82 terminated at 0.95m				
					41.0	1.5							
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH83**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***16.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 42.40

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE**: 200mm thick				PAVEMENT MATERIAL
ADT			NONE OBSERVED	E	42.0	0.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, dark grey, fine to coarse gravel. **FILL: SAND:** Fine to coarse grained, dark grey, fine to medium grained gravel. **FILL: GRAVELLY SAND:** Fine to medium grained, dark grey, fine to medium gravels. **FILL: GRAVELLY SAND:** Fine to coarse grained, dark grey to grey/brown, fine to medium gravels.	M			FILL
				SPT 4,8,12 N*=20	41.5	1.0							
								SP	**SAND:** Fine to medium grained, brown/grey/yellow.		L		AEOLIAN SAND
				SPT 2,2,3 N*=5	41.0	1.5							
					40.5	2.0			As designated, Borehole CBH83 terminated at 1.65m				
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	*hand auger*
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH84***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***16.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 42.40

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE:** 200mm thick.				PAVEMENT MATERIAL
ADT				E					**FILL: GRAVELLY SAND:** Fine to coarse grained, brown, fine grained gravel.	M			FILL
					42.0				**FILL: GRAVELLY SAND:** Fine to coarse grained, dark grey, fine grained gravel.				
				E		0.5		SP	**SAND:** Fine to medium grained, pale yellow/brown/grey, some fine to medium ironstone gravel (<10%).		L		AEOLEAN SAND REFUSAL ON SANDSTONE
									TC Bit refusal at 0.5m. Borehole CBH84 terminated at 0.5m				
					41.5	1.0							
					41.0	1.5							
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH85**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 41.90

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE:** 150mm thick.				PAVEMENT MATERIAL
ADT			NONE OBSERVED	E + DUP	41.5	0.5			**FILL: GRAVELLY SAND:** Fine to coarse sand, dark brown/dark grey, fine to coasre gravel.	M			FILL Pieces of brick and sandstone encountered at 0.4-0.8m SPT could not be done at 0.5m due to brick fragments in the fill.
				E									
				SPT 5,5,6 N*=11	41.0	1.0							
					40.5			SP	**SAND:** Fine to medium grained, brown/grey.		L		AEOLIAN SAND
						1.5			As designated, Borehole CBH85 terminated at 1.45m				
					40.0	2.0							
					39.5	2.5							
					39.0	3.0							
					38.5	3.5							
					38.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH86**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 41.90

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE**: 200mm thick.				PAVEMENT MATERIAL
ADT				E	41.5	0.5			**FILL: GRAVELLY SAND:** Fine to coarse sand, dark brown/dark grey, fine to medium gravel.	M			FILL Fill contains small (<10mm diameter) pieces of brick (<5%).
				SPT 3,4,5 N*=9	41.0			SP	**SAND**: Fine to medium grained, pale yellow/brown/grey, some fine to medium ironstone gravel (<10%).		L		AEOLIAN SAND
					40.5	1.0			As designated, Borehole CBH86 terminated at 0.95m				
					40.0	1.5							
					39.5	2.0							
					39.0	2.5							
					38.5	3.0							
					38.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH87***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 39.85

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N		E	39.5	0.5			**FILL: GRAVELLY SAND:** Medium to coarse, grey, coal and ash sand and gravel.	D			FILL
			►	SPT 3,3,3 N*=6				SM	**SILTY SAND:** Fine to medium grained, black, some organics.	M	L		AEOLIAN SAND
					39.0			SP	**SAND:** Medium to coarse grained, pale brown, poorly graded, quartz sand.	W			
						1.0			**SANDSTONE:** Pale brown, extremely to moderately weathered.		VD		SANDSTONE
					38.5	1.5			TC bit refusal on sandstone Borehole CBH87 terminated at 1m				
					38.0	2.0							
					37.5	2.5							
					37.0	3.0							
					36.5	3.5							
					36.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH88**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 40.60

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ASV		N		E	40.5				**FILL: GRAVELLY SAND:** Fine to coarse grained, black, ash and coal gravel and sand.	D			FILL
				E		0.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, brown, brick gravel.				
				SPT 3,3,4 N*=7	40.0			SM	**FILL: SILTY SAND:** Fine to medium sand, dark brown to black, some organics.	M	L		AEOLIAN DEPOSIT
			►		39.5	1.0				W			
				SPT 1,4,5 N*=9	39.0	1.5							
					38.5	2.0		SP	**SAND:** Medium to coarse grained, pale brown, poorly graded quartz sand.				
					38.0	2.5			V Bit refusal on sandstone. Borehole CBH88 terminated at 2.4m				
					37.5	3.0							
					37.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support: M mud, C casing, N nil

penetration: 1 2 3 4 — no resistance ranging to refusal

water: 10/1/98 water level on date shown; water inflow; water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH89**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 40.40

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV		N		E + DUP5					**FILL: GRAVELLY SAND:** Medium to coarse sand,black, coal and ash sand and gravel.	M			FILL
					40.0	0.5		SM	**SILTY SAND:** Fine to medium grained, dark brown to black, roots.		L		AEOLIAN SAND
				SPT 3,2,4 N*=6									
			▶		39.5	1.0		SP	**SAND:** Medium to coarse sand, pale brown, poorly graded.				
					39.0	1.5				W			
				SPT 4,R,R N*=R									
									SANDSTONE: Medium to coarse, pale yellow, extremely to moderately weathered.		VD		MODERATELY WEATHERED SANDSTONE
					38.5	2.0			V Bit refusal at 1.8, Borehole CBH89 terminated at 1.8m				
					38.0	2.5							
					37.5	3.0							
					37.0	3.5							
					36.5	4.0							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix	
e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH90***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***17.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 40.2

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N		E	40.0	0.0			**FILL: GRAVELLY SAND:** Fine to coarse grained, grey, fine to medium gravels, trace of ash.	D			FILL
						0.5		GW	**GRAVELLY SAND:** Fine to medium grained, grey/pale yellow, fine to medium grained gravel.	M	MD		RESIDUAL SOIL
				SPT 4,5,5 N*=10	39.5	1.0							
			►		39.0			SC	**CLAYEY SAND:** Fine to medium grained, pale yellow, low plasticity clay.	W	MD-L		
				E		1.5			Borehole CBH90 terminated at 1.5m				
					38.5	2.0							
					38.0	2.5							
					37.5	3.0							
					37.0	3.5							
					36.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

► water inflow

◄ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH91***

Sheet 1 of 2

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD/SG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***MM***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 39.50

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E + DUP5					**FILL: GRAVELLY SAND:** Fine to medium grained, grey, coal and ash sand and gravel.	D			FILL
								SM	**SILTY SAND:** Fine to medium sand, black, organics.	M	L		AEOLIAN SAND
								SP	**SAND:** Medium to coarse sand, pale brown, poorly graded, quartz sand.		MD		
			▶	SPT 8,R,R N*=R	39.0	0.5			**SANDSTONE:** Very low strength, moderately weathered, pale grey and yellow, medium to coarse grained quartz sand.	W	VD		BEDROCK
					38.5	1.0			Borehole CBH91 continued as cored hole				
					38.0	1.5							
					37.5	2.0							
					37.0	2.5							
					36.5	3.0							
					36.0	3.5							
					35.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH91**

Sheet 2 of 2

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Date started: ***10.3.2005***

Date completed: ***10.3.2005***

Logged by: ***SD/SG***

Checked by: ***MM***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 39.50

hole diameter: 125 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects		
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
		▼	39.0	0.5		Continued from non-cored borehole						
NMLC			38.5	1.0		**SANDSTONE:** Coarse grained, pale orange brown and pale grey, massive.	MW		D 0.73 A 0.69			—JT, 40°, IR, RO, CN —JT, 50°, PL, RO, CN
			38.0	1.5		**NO CORE:** 1.44-1.69m.						—JT, 50°, PL, RO, CN
						SANDSTONE: Medium grained, pale grey banded pale orange brown, indistinctly laminated with some iron staining, 0-15 degrees, trace of carbonaceous flecks.	MW					—SM, 0°, clayey sand, 30mm thick —PT, 5°, PL, RO, VN
			37.5	2.0					D 0.5 A 0.63			
			37.0	2.5		becoming pale grey and massive	SW			84		—PT, 5°, PL, RO, iron stained clay VN
			36.5	3.0					D 0.44 A 0.59			
			36.0	3.5								
									D 0.21 A 0.13			
			35.5	4.0		CBH91 terminated at 3.9m						

method

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

core-lift

- casing used
- barrel withdrawn

graphic log/core recovery

- core recovered - graphic symbols indicate material
- no core recovered

water

- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss
- 25 water pressure test result (lugeons) for depth interval shown

weathering

FR	fresh
SW	slightly weathered
MW	moderately weathered
HW	highly weathered
XW	extremely weathered
DW	distinctly weathered (covers MW and HW)

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

JT	joint
PT	parting
SM	seam
SZ	sheared zone
SS	sheared surface
CS	crushed seam

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	irregular

roughness

VR	very rough
RO	rough
SO	smooth
SL	slickensided

coating

CN	clean
SN	stained
VN	veneer
CO	coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH92**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***17.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 40.50

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E + DUP5					**FILL: GRAVELLY SAND:** Fine to coarse grained, *grey, fine to medium gravel, trace ash.*	D			FILL
				E				SP	**GRAVELLY SAND:** Fine to medium grained, pale yellow, fine to medium gravel.	M	MD		AEOLIAN SAND
									TC Bit refusal at 0.25 Borehole CBH92 terminated at 0.25m				
					40.0	0.5							
					39.5	1.0							
					39.0	1.5							
					38.5	2.0							
					38.0	2.5							
					37.5	3.0							
					37.0	3.5							
					36.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix
e.g. ADT

support
M mud N nil
C casing

penetration
1 2 3 4
no resistance ranging to refusal

water
10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - *sample recovered*
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description
based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Form GEO 5.3 Issue 3 Rev.2

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH93***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***17.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 39.80

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E	39.5	0.5		SP	**FILL: GRAVELLY SAND:** Fine to coarse grained, grey, fine to medium gravel, trace ash.	D M	L		FILL
					39.0	1.0			**SAND:** Fine to medium grained, pale yellow.				AEOLIAN SAND
					38.5	1.5			TC Bit refusal.				
					38.0	2.0			Borehole CBH93 terminated at 0.05m				
					37.5	2.5							
					37.0	3.0							
					36.5	3.5							
					36.0	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH94**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***10.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 40.50

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N							**CONCRETE:** 200mm thick.				PAVEMENT MATERIAL
				E	40			SM	**SILTY SAND:** Medium to coarse, black to dark grey, trace roots and organics.	M	VL		AEOLIAN SAND
				SPT 6,8,Hammer Bouncing N*=R		1		SP	**SAND:** Medium to coarse grained, pale brown to red-brown, poorly graded.		D-VD		
			NONE OBSERVED		39				Borehole CBH94 continued as cored hole				
						2							
					38								
						3							
					37								
						4							
					36								
						5							
					35								
						6							
					34								
						7							
					33								
						8							

method
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
*bit shown by suffix
e.g. ADT

support
M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water
10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
V vane shear (kPa)
P pressuremeter
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH94**

Sheet 1 of 1

Engineering Log - Cored Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***10.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model & mounting: MOLE 4WD | Easting: | slope: -90° | R.L. Surface: 40.50

hole diameter: 125 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance						rock mass defects			
method	core-lift	water	RL	depth metres	graphic log core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial		RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular	defect description — general
			40	1		Continued from non-cored borehole								
		NONE OBSERVED				**NO CORE**								
			39	2		**SANDSTONE:** Coarse grained, pale grey and pale yellow / brown, massive, with some dark grey siltstone clasts lenses.	MW		D A 0.32 0.75				PT,15°,IR,VRO,Clay,VN JT,40°,IR,VRO,Clay,VN PT,10°,IR,VR,Clay VN XW,JM,10°,IR,Siltstone PT,15°,IR,RO,VN JT,30°,IR,RO,VN XW,SM,15-40°,IR,Siltstone	PT,0-20°,PL,RO,Clay,VN/CO
			38	3		**SANDSTONE:** Coarse grained, pale grey with red / brown and orange / brown, indistinctly laminated 0-20° trace siltstone laminae.			D A 1.14 1.15		70		Closed JT,15°,ST,Clay CO	
			37	4		**SANDSTONE:** Sandstone, medium grained, pale grey, distinctly laminated 0-20°, trace of carbonaceous laminae.	SW/Fr		D A 0.52 0.89				SM,0°,PL,Sandy Clay,5mm	
									D A 0.57 0.61					
			36	5		CBH94 terminated at 4.2m								
			35	6										
			34	7										
			33	8										

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
water pressure test result (lugeons) for depth interval shown (25)

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

roughness
VR very rough
RO rough
SO smooth
SL slickensided

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

coating
CN clean
SN stained
VN veneer
CO coating

CORED BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH123***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK Easting: slope: -90° R.L. Surface: 42.2

hole diameter: 125 mm Northing bearing: datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED		42.0	0.0			**CONCRETE**: 200mm thick.				PAVEMENT MATERIAL
				E					**FILL: SAND:** Medium to coarse grained, poorly graded, brown, organics and quartz sand sized particles.	M			FILL
				SPT 3,2,4 N*=6	41.5	0.5		SW	**SAND:** Medium to coarse quartz sand, dark brown, trace to some silt.		L		AEOLIAN SAND
					41.0	1.0		SP	**SAND:** Medium to coarse grained, pale grey.				
				SPT 4,6,15 N*=21	40.5	1.5							
				E	40.0	2.0		SP	**SAND:** Medium to coarse grained, dark red/brown, ironstained.		MD		
					39.5	2.5			TC Bit refusal on sandstone. Borehole CBH123 terminated at 2.2m				
					39.0	3.0							
					38.5	3.5							
						4.0							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***MW7***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Piezometer

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model & mounting: FOXB40L TRUCK | Easting: | slope: -90° | R.L. Surface: 42.86

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
DT		C				42	1			**CONCRETE:** 200mm thick.			PAVEMENT MATERIAL
STRATA PACK DT			23/3/05 ▼							**SANDSTONE:** Fine to medium grained, pale grey.			SANDSTONE LOGGED FROM WATER RETURN FROM WASH BORING
						41	2						
										Minor sandy clay bands throughout.			
						40	3						
						39	4						
						38	5						
						37	6						
						36	7			*At designated point* Borehole terminated at 6m			
						35	8						

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix	
e.g.	ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***MW10***

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model & mounting: FOXB40L TRUCK | Easting: | slope: -90° | R.L. Surface: 42.44

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT						42	1			**ASPHALT**: 100mm thick.	D		PAVEMENT MATERIAL
										FILL: GRAVELLY SAND: Fine to coarse, dark grey/ dark brown, gravels are fine to coarse.			FILL: Roadbase
										FILL: GRAVELLY SAND: Fine to coarse sand, dark brown, gravels are fine to medium grained.	M		FILL
										FILL: SILTY SAND: Fine to medium grained, dark grey/brown.			
STRATA PACK			23/3/05			41	2			**SANDSTONE:** Fine to medium grained, some fine gravel.	W	VD	BEDROCK - Sandstone logged from chips in wash bore return
						40	3						Several sandy clay bands observed between 1.5m to 4m.
						39	4						
						38	5						
						37	6						
						36	7			Borehole terminated at 6m			
						35	8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA22***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 42.30

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE:** 150mm thick.	D			PAVEMENT MATERIAL
HA				E	42.0	0.5			**FILL: SAND:** Fine to medium, brown to pale brown, some fragments of brick and crushed sandstone.	M			FILL 100mm diameter brick fragment at 0.5m.
				E					Refusal on brick fragments up to 200mm diameter. Borehole HA22 terminated at 0.6m				
					41.5	1.0							
					41.0	1.5							
					40.5	2.0							
					40.0	2.5							
					39.5	3.0							
					39.0	3.5							
					38.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA23***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 43.70

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT			NONE OBSERVED						**CONCRETE**: 150mm thick.	D			PAVEMENT MATERIAL
HA				E	43.5				**SANDSTONE:** Pale grey, medium to coarse sand.	M	VD		SANDSTONE
									Refusal on Sandstone.				
									Borehole HA23 terminated at 0.2m				
					43.0	0.5							
					42.5	1.0							
					42.0	1.5							
					41.5	2.0							
					41.0	2.5							
					40.5	3.0							
					40.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA24***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 43.70

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N	NONE OBSERVED						**CONCRETE**: 150mm thick.	D			PAVEMENT MATERIAL
HA				E	43.5	0.5			**FILL: SAND:** Fine grained, black, trace shale, trace crushed brick fragments to 50mm, trace silt. Becoming dark brown. Larger fragments of brick with depth.	M			FILL
				E	43.0								
					42.5	1.0			Borehole HA24 terminated at 0.9m				
					42.0	1.5							
					41.5	2.0							
					41.0	2.5							
					40.5	3.0							
					40.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA25***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 40.20

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E	40.0				**FILL: SILTY SAND:** Fine sand, pale grey to grey, ash sand.	D			FILL
				E		0.5		SP	**SAND:** Fine to medium grained, orange/brown.	M	L		AEOLIAN SAND
				E	39.5								
									Borehole HA25 terminated at 0.7m				
					39.0	1.0							
					38.5	1.5							
					38.0	2.0							
					37.5	2.5							
					37.0	3.0							
					36.5	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix	
e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **HA26**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine grained, pale grey to grey, ash sand.	D			FILL
									FILL: SAND: Fine to coarse grained, yellow, with some fine gravel.	M			Crushed sandstone at 0.3m.
				E		0.5			Refusal on sandstone fragments up to 100mm diameter. Borehole HA26 terminated at 0.5m				
						1.0							
						1.5							
						2.0							
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA28***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***16.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 39.50

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E					**FILL: SAND:** Fine to medium grained, yellow/orange.	D			FILL
									FILL: SILTY SAND: Fine grained sand, pale grey to grey ash silt and sand.				
					39.0	0.5		SW	**SAND:** Fine to medium grained, dark brown to dark grey, some organic material.	M	L		AEOLIAN
				E				SP	**SAND:** Fine to medium grained, yellow/orange.		MD		
					38.5	1.0			Borehole HA28 terminated at 0.9m				
					38.0	1.5							
					37.5	2.0							
					37.0	2.5							
					36.5	3.0							
					36.0	3.5							
					35.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **HA29**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***JRD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.*** Checked by: ***AJB***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 42.40

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
DT		N							**CONCRETE:** 150mm thick.	D			PAVEMENT MATERIAL
HA				E	42.0	0.5			**FILL: SANDY GRAVEL:** Medium to coarse grained, pale brown, sand is fine to medium with some silt, trace brick fragments up to 100mm diameter.	M			FILL
			►	E	41.5			SM	**SILTY SAND:** Fine grained, dark grey to black with some organic material.	W	MD-L		RESIDUAL Mild H2S odour
					41.0	1.0			Borehole HA29 terminated at 0.9m				
					40.5	1.5							
					40.0	2.0							
					39.5	2.5							
					39.0	3.0							
					38.5	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

APPENDIX B2

BOREHOLE TEST PIT AND HAND AUGER LOGS

PHASE 2 INVESTIGATION MARCH 2005

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH9**

Sheet 1 of 2

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***25.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***25.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N		E	34				**FILL: CLAYEY SAND:** Fine to medium grained, dark grey brown, low plasticity clay (<5%), waste building materials (<5%).	M			FILL
				Bs		1		SP	**SAND:** Fine to medium grained, dark grey brown, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 15,10,8 N*=18	33								From 1-1.25m environmental sample.
				Bs		2		SP	**SAND:** Fine to medium grained, pale yellow grey brown, low plasticity clay (<5%).				
				SPT 5,5,7 N*=12	32	3		SP	**SAND:** Fine to medium grained, pale grey white, low plasticity clay (<5%).		L		From 2.5-2.7m environmental sample.
			▶		31	4				W	L-MD		
				SPT 5,5,10 N*=15	30								From 4-4.2m environmental sample.
						5			V-bit refusal at 5.1m.				
					29				Borehole CBH9 continued as cored hole				
						6							
					28								
						7							
					27								
						8							
					26								
						9							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH9**

Sheet 2 of 2

Office Job No.: **E12723/03**

Engineering Log - Cored Borehole

Client: ***NSW Department Of Commerce***

Date started: ***25.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***25.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm Drilling fluid: | Northing: | bearing: - | datum: AHD

drilling information | **material substance** | **rock mass defects**

method	core-lift	water	RL	depth metres	graphic log core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			34	1								
			33	2								
			32	3								
		▶	31	4								
			30	5		Continued from non-cored borehole						
			29	6		**SANDSTONE:** Medium grained, pale grey banded grey, indistinctly bedded.	MW			66		PT, 0°, IR, RO, sandy clay CO.
						NO CORE:						
						SANDSTONE: Medium grained, pale grey banded grey, indistinctly bedded.	MW		D A 0.64 0.7			SM, 0°-10°, IR, clayey sand, 20mm (XW). XW SM, IR, clayey sand 15mm. PT, 0°, IR, RO, VN.
			28	7		**NO CORE:**						
						SANDSTONE: Medium grained, pale grey banded grey, indistinctly bedded.	MW					SM, 0°, PL, sandy clay, 10mm. SM, 0°, PL, sandy clay 20mm. JT, 70°, PL, VR, clayey sand CO (6.23-6.32m). Closed PT, 15°, PL.
			27	8		**SANDSTONE:** Medium grained, pale grey, indistinctly bedded to massive.			D A 0.47 0.57			PT, 0°-20°, PL, RO, sandy clay CO and VN.
									D A 0.55 0.77			
			26	9		CBH9 terminated at 8.09m						

CORED BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

roughness
VR very rough
RO rough
SO smooth
SL slickensided

coating
CN clean
SN stained
VN veneer
CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH10 MW1***

Engineering Log - Piezometer

Sheet 1 of 1

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***25.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***25.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.7

hole diameter: 100mm | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		E		35	1			**FILL: TOPSOIL: SILTY SAND:** Fine to medium grained, dark grey-black, low liquid limit silt.	M		FILL
										FILL: CLAYEY SAND: Fine to medium grained, dark grey and dark brown, low plasticity clay.			
				SPT 4,5,10 N*=15		34	2			**FILL: CLAYEY SAND:** Fine to medium grained, brown and grey and black and yellow, low plasticity clay.			From 1-1.2m environmental sample.
			▶								W		
				SPT 4,4,9 N*=13		33	3		SP	**SAND:** Fine to medium grained, dark brown, low plasticity clay (<5%).		L	AEOLIAN DUNE OR BEACH DEPOSIT From 2.5-2.7m environmental sample.
						32	4		SP	**SAND:** Fine to medium grained, dark brown and black, low plasticity clay (<5%).			
				SPT 5,4,5 N*=9		31	5						
										Borehole CBH10 MW1 terminated at 5m Borehole terminated at 5m			
						30	6						
						29	7						
						28	8						

PIEZOMETER E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH11 MW2**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***26.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***26.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.7

hole diameter: 100mm | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		E		35	1			**FILL: CLAYEY SAND:** Fine to coarse grained, grey and brown, low plasticity clay, sandstone boulders up to 120mm (<5%).	M		FILL
				SPT 6,9,13 N*=22		34	2		SP	**SAND:** Fine to medium grained, pale yellow grey, low plasticity clay (<5%).		MD	AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.3m environmental sample.
				SPT 3,4,6 N*=10		33	3		SP	**SAND:** Fine to medium grained, yellow and pale grey-white, low plasticity clay (<5%).		L	From 2.5-2.8m environmental sample.
			▶	SPT 6,8,10 N*=18		32	4		SP	**SAND:** Fine to medium grained, pale yellow grey, low plasticity clay (<5%).	W	MD	
				SPT 2,6,8 N*=14		31	5		SC	**Sandy CLAY:** Medium to high plasticity, grey, fine to medium sand.	M/W	St	
						30	6			Borehole CBH11 MW2 terminated at 5.95m Borehole terminated at 5.95m			
						29	7						
						28	8						

PIEZOMETER E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support: C casing; N nil

penetration: 1 2 3 4 — no resistance ranging to refusal

water: 10/1/98 water level on date shown; water inflow; water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH12**

Sheet 1 of 2

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***26.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***26.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
VBIT		N		E					**FILL: CLAYEY SAND:** Fine to coarse grained, dark brown-black, low plasticity clay, waste building materials ie bricks, tiles, plastic.	M			FILL
					34			SP	**SAND:** Fine to medium grained, dark brown, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 5,8,10 N*=18		1							From 1-1.3m environmental sample.
			▶		33								
						2		SP	**SAND:** Fine to medium grained, pale yellow grey, low plasticity clay (<5%).	W			
				SPT 25 for 100mm N*=R	32								From 2.5-2.6m environmental sample.
						3			V-bit refusal. Borehole CBH12 continued as cored hole				
					31								
						4							
					30								
						5							
					29								
						6							
					28								
						7							
					27								
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH12**

Sheet 2 of 2

Office Job No.: **E12723/03**

Engineering Log - Cored Borehole

Client: ***NSW Department Of Commerce***

Date started: ***26.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***26.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD/SG***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: - | datum: AHD

drilling information					material substance						rock mass defects		
method	core-lift	water	RL	depth metres	graphic log core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			34	1								
			33	2								
		▶	32			Continued from non-cored borehole						
				3		**SANDSTONE:** Medium grained, pale brown.	XW		D 0.04 A 0.04			PT, 0°, PL, RO.
			31			**NO CORE:**				9		
				4								
			30									
				5		**SANDSTONE:** Medium grained, pale brown.	XW					XW SM, IR, clayey sand, 40mm.
			29									XW SM, IR, clayey sand, 40mm.
						SANDSTONE: Medium grained, pale grey, banded grey, indistinctly laminated 0°-20°.	MW					JT, 60°, PL, RO, CO.
				6					D 0.42 A 0.68			SM, IR, sandy clay 40mm.
												PT, 10°, PL, RO, sandy clay CO.
			28							59		PT, 10°, IR, RO, carbonaceous VN.
												PT, 10°, PL, RO, carbonaceous CO.
				7					D 0.44 A 0.28			JT, 60°, IR, RO, CN (6.5-6.56m).
												JT, 60°, PL, RO, VN.
												JT, 30°, PL, RO, VN.
						CBH12 terminated at 7m						JT, 60°, PL, RO, VN.
			27									PT, 15°, PL, RO, carbonaceous VN.
				8								

PT, 0°-20°, IR, RO, VN.

CORED BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

method

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

core-lift

- casing used
- barrel withdrawn

graphic log/core recovery

- core recovered - graphic symbols indicate material
- no core recovered

water

- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss
- water pressure test result (lugeons) for depth interval shown (25)

weathering

FR	fresh
SW	slightly weathered
MW	moderately weathered
HW	highly weathered
XW	extremely weathered
DW	distinctly weathered (covers MW and HW)

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

JT	joint
PT	parting
SM	seam
SZ	sheared zone
SS	sheared surface
CS	crushed seam

roughness

VR	very rough
RO	rough
SO	smooth
SL	slickensided

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	irregular

coating

CN	clean
SN	stained
VN	veneer
CO	coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH13 MW3**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***26.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***26.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 36.1

hole diameter: 100mm | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		E		36				**FILL: CLAYEY SAND:** Fine to coarse grained, pale yellow brown, low plasticity clay (<5%).	M		FILL
				SPT 2,2,5 N*=7		35	1		SP	**SAND:** Fine to medium grained, dark brown-black, low plasticity clay (<5%).		L	AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.3m environmental sample.
						34	2		SP	**SAND:** Fine to medium grained, pale yellow grey, low plasticity clay (<5%).			
			▶	SPT 25 for 100mm N*=R		33	3		SP	**SAND:** Fine to medium grained, dark brown mottled black and grey, low plasticity clay (<5%).	W	VD MD	From 2-2.61m environmental sample.
				SPT 5,8,9 N*=17		32	4						From 4-4.3m environmental sample.
				SPT 3,4,6 N*=10		31	5		SP	**SAND:** Fine to medium grained, pale grey, low to intermediate plasticity clay.		L	From 5.5-5.8m environmental sample.
						30	6			Borehole terminated at 5.95m			
						29	7						
							8						

PIEZOMETER E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH14 MW4**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		E		34	1			**FILL: CLAYEY SAND:** Fine to coarse grained, black-dark brown, low plasticity clay (<5%), waste building materials (<5%).	M		FILL
				SPT 1,1,2 N*=3		33							From 1-1.3m environmental sample.
							2		SP	**SAND:** Fine to medium grained, dark brown and dark grey, low plasticity clay (<5%).		MD	AEOLIAN DUNE OR BEACH DEPOSIT
			▶								W		
				SPT 4,8,9 N*=17		32							From 2.5-2.8m environmental sample.
						31	3						
							4		SC	**Sandy CLAY:** Medium to high plasticity, grey brown and black, fine to medium grained sand.		VSt	
				SPT 3,4,5 N*=9									From 4-4.3m environmental sample.
						30				Borehole CBH14 MW4 terminated at 4.45m Borehole terminated at 4.45m			
							5						
						29							
							6						
						28							
							7						
						27							
							8						

PIEZOMETER E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH15**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	35.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark brown-black, low plasticity clay (<5%).	M			FILL
				SPT 2,3,2 N*=5	34.5	1.0		SP	**SAND:** Fine to medium grained, yellow brown and pale grey, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT From 1-1.3m environmental sample.
					34.0	1.5							
					33.5	2.0			V bit refusal. Borehole CBH15 terminated at 2m				
					33.0	2.5							
					32.5	3.0							
					32.0	3.5							
					31.5	4.0							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	*plastic limit*
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	*loose*
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH16**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N		E	35.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark brown-black, low plasticity clay, waste building materials ie wire, steel, bricks (<5%).	M			FILL
				SPT 4,5,7 N*=12	34.5	1.0							From 1-1.3m environmental sample.
					34.0	1.5							
					33.5	2.0		SP	**SAND:** Fine to medium grained, dark grey-pale grey, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 7,7,9 N*=16	33.0	2.5							From 2.5-2.8m environmental sample.
					32.5	3.0					MD		
			▶		32.0	3.5		SP	**SAND:** Fine to medium grained, grey brown, low plasticity clay (<5%).	W			
				E(D)	31.5	4.0			Borehole CBH16 terminated at 3.9m				

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH17**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa (100 200 300 400)	structure and additional observations
V BIT		N		E					**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey and brown, low plasticity clay, waste building material ie crushed bricks and concrete, wire, steel (<5%).	M			FILL
				SPT 9,8,4 N*=12	34	1							From 1-1.3m environmental sample.
					33	2			**FILL: CLAYEY SAND:** Fine to coarse grained, mottled red brown, grey brown and black, low to medium plasticity clay.				
									FILL: CLAYEY SAND: Fine to coarse grained, mottled red, dark brown and orange brown, low to *medium plasticity clay.*				From 2.5-2.8m environmental sample.
				SPT 9,2,2 N*=4	32	3		SP	**SAND:** Fine to medium grained, grey-brown and dark grey, low to medium plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 6,6,9 N*=15	31	4							From 4-4.3m environmental sample.
					30	5		SP	**SAND:** Fine to medium grained, brown, low plasticity clay (<5%).	W			
					29	6							
					28	7			Borehole CBH17 terminated at 6.5m				
					27	8							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH18**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.6

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N		E	34.5	0			**FILL: CLAYEY SAND:** Fine to coarse grained, grey pale brown, low plasticity clay.	M			FILL
					34.0	0.5							
									FILL: CLAYEY SAND: Fine to coarse grained, grey and pale brown with mottled red brown sandstone pieces up to 50mm, low plasticity clay.				From 1-1.3m environmental sample.
				SPT 3,3,3 N*=6	33.5	1.0							
					33.0	1.5		SP	**SAND:** Fine to medium grained, grey brown and yellow, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
				E	32.5	2.0							
					32.0	2.5			Borehole CBH18 terminated at 2.4m				
					31.5	3.0							
					31.0	3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3.Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH19 MW5**

Sheet 1 of 2

Engineering Log - Piezometer

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.4

hole diameter: 100mm | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		E		35.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark brown and dark grey, low plasticity clay (<5%).	M		FILL
						34.5	1.0		SP	**SAND:** Fine to medium grained, grey, low plasticity clay (<5%).		MD	AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 5,9,12 N*=21		34.0	1.5						From 1-1.3m environmental sample.
						33.5	2.0		SP	**SAND:** Fine to medium grained, yellow brown and dark brown, low plasticity clay (<5%).			
				SPT 5,7,10 N*=17		33.0	2.5						From 2.5-2.8m environmental sample.
			▼			32.5	3.0		SP	**SAND:** Fine to medium grained, pale grey brown and yellow brown, low plasticity clay (<5%).	W		
						32.0	3.5						
						31.5	4.0						

PIEZOMETER E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev 0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

► water inflow

◄ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH19 MW5**

Sheet 2 of 2

Engineering Log - Piezometer

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model & mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.4

hole diameter: 100mm | Northing: | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
V BIT		N		SPT 4,9,12 N*=21		31.0	4.5		SP	**SAND:** Fine to medium grained, pale grey brown and yellow brown, low plasticity clay (<5%). *(continued)*	W	MD	From 4-4.3m environmental sample.
						30.5	5.0						
						30.0	5.5			Borehole CBH19 MW5 terminated at 5.5m Borehole terminated at 5.5m			
						29.5	6.0						
						29.0	6.5						
						28.5	7.0						
						28.0	7.5						
						27.5	8.0						

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH20**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.2

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	35.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, grey brown and dark brown and black, low plasticity clay.	M			FILL
					34.5	1.0			**FILL: SILTY SAND:** Fine to coarse grained, dark brown-black, low liquid limit silt.				
				SPT 2,2,3 N*=5	34.0	1.5							From 1-1.3m environmental sample.
					33.5	2.0		SP	**SAND:** Fine to medium grained, pale yellow grey, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
					33.0	2.5							
				SPT 4,7,9 N*=16	32.5	3.0							From 2.5-2.8m environmental sample.
					32.0	3.5			Refusal at 3.2m on sandstone. Borehole CBH20 terminated at 3.2m				
					31.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH21**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce***

Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D***

Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 35.6

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	35.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, grey brown, low plasticity clay.	M			FILL
					35.0	1.0		SP	**SAND:** Fine to medium grained, grey and brown, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT
				SPT 6,6,8 N*=14	34.5	1.5							From 1-1.3 environmental sample.
					34.0	2.0		SP	**SAND:** Fine to medium grained, yellow and pale grey, low plasticity clay (<5%).		MD		
				SPT 4,7,9 N*=16	33.5	2.5							From 2.5-2.8m environmental sample.
					33.0	3.0							
					32.5	3.5			Refusal on sandstone at 3.25m. Borehole CBH21 terminated at 3.25m				
					32.0	4.0							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH22**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

Coffey

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 34.0

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, *colour, secondary and minor components.*	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N		E	33.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, dark grey-black, low plasticity clay.	M			FILL
					33.0	1.0			**FILL: CLAYEY SAND:** Fine to coarse grained, yellow grey and brown, low plasticity clay.				
				SPT 10,10,14 N*=24									*From 1-1.3m environmental sample.*
					32.5	1.5		SP	**SAND:** Fine to medium grained, pale grey brown, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
					32.0	2.0							
				SPT 7,9,9 N*=18	31.5	2.5							From 2.5-2.8m environmental sample.
					31.0	3.0							
					30.5	3.5			Borehole CBH22 terminated at 3.3m				
					30.0	4.0							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	*bulk sample*
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	*plastic limit*
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH23**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 32.7

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E	32.5	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, orange brown, low plasticity clay.	M			FILL
					32.0	1.0			**FILL: CLAYEY SAND:** Fine to coarse grained, brown, low plasticity clay, waste building materials ie steel, plastics, concrete (<5%).				From 1-1.3m environmental sample.
				SPT 4,4,6 N*=10	31.5	1.5							
					31.0	2.0			**FILL: CLAYEY SAND:** Fine to coarse grained, dark brown and yellow, low plasticity clay, waste building materials ie conjute paperwork, wire, bricks (<5%).				
					30.5	2.5							
				SPT 19,18,25/100mm N*=R	30.0								
						3.0			Refusal on sandstone. Borehole CBH23 terminated at 2.7m				
					29.5	3.5							
					29.0	4.0							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH24**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***27.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***27.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: P160 Truck | Easting: | slope: -90° | R.L. Surface: 31.1

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N		E	31.0	0.5			**FILL: CLAYEY SAND:** Fine to medium grained, yellow grey brown, low plasticity clay, waste building materials ie terracotta, bricks, wire, plastic, concrete.	M			FILL
					30.5				**FILL: CLAYEY SAND:** Fine to coarse grained, grey brown, *low plasticity clay. Traces of sandstone* boulders up to 50mm (<5%).				
				SPT 2,2,3 N*=5	30.0	1.0							From 1-1.3m environmental sample.
					29.5	1.5							
					29.0	2.0		SC	**SAND:** Fine to medium grained, grey brown, *low* plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
					28.5	2.5			Borehole CBH24 terminated at 2.2m				
					28.0	3.0							
					27.5	3.5							
						4.0							

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH65***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***2.11.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***2.11.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Complex, Malabar, NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Mitsi Truck | Easting: | slope: -90° | R.L. Surface: 36.5

hole diameter: 100 mm | Northing | bearing: - | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
V BIT		N	None observed	E					**FILL: CLAYEY SAND:** Fine to coarse grained, brown to dark brown, low plasticity clay.	M			FILL
					36.0	0.5			**FILL: CLAYEY SAND:** Fine to coarse grained, pale grey/pale brown, low plasticity clay.				
				SPT 4,6,7 N*=13	35.5	1.0							
					35.0	1.5		SP	**SAND:** Fine to medium grained, mottled pale grey, orange, brown, low plasticity clay (<5%).		MD		AEOLIAN DUNE OR BEACH DEPOSIT
					34.5	2.0							
				E	34.0	2.5							
									Borehole CBH65 terminated at 2.5m				
					33.5	3.0							
					33.0	3.5							
					32.5	4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. *ADT*

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.3 AREA A-B-C-D-E BOREHOLES CORRECT AT 22.7.05.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA14***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E					**FILL: SILTY SAND:** Fine to coarse grained, dark grey brown, low liqiud limit silt (<5%).	M			FILL
								SP	**SAND:** Fine to medium grained, pale grey brown, low plasticity clay (<5%).		L		AEOLIAN DUNE OR BEACH DEPOSIT
				E	35.0	0.5			Borehole HA14 terminated at 0.5m				
					34.5	1.0							
					34.0	1.5							
					33.5	2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA15***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 31.8

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E					**FILL: SILTY SAND:** Fine to coarse grained, dark grey brown, low liqiud limit silt (<5%).	D			FILL
					31.5			SP	**SAND:** Fine to medium grained, pale grey brown to yellow, low plasticity clay (<5%).	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
				E		0.5							
									Borehole HA15 terminated at 0.5m				
					31.0	1.0							
					30.5	1.5							
					30.0	2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix	
e.g.	ADT

support

M mud N nil

C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - *sample recovered*
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA16***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 35.2

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E	35.0			SP	**SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
				E		0.5							
					34.5	1.0			Hand Auger refusal on Sandstone Bedrock. Borehole HA16 terminated at 0.5m				
					34.0	1.5							
					33.5	2.0							

BOREHOLE HAND AUGERS - SITE D.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **HA17**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/03**

Client: ***NSW Department Of Commerce***

Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services***

Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D***

Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 32.8

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E	32.5			SP	**SAND:** Fine to medium grained, pale grey brown, low plasticity clay (<5%).	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
				E		0.5							
					32.0	1.0			Hand Auger refusal on Sandstone Bedrock. Borehole HA17 terminated at 0.5m				
					31.5	1.5							
					31.0	2.0							

BOREHOLE HAND AUGERS - SITE D.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	*refusal*

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA18***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 33.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E	33.5			SP	**SAND:** Medium to coarse grained, pale grey brown, low plasticity clay (<5%).	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
				E									
					33.0	0.5			Hand Auger refusal on Sandstone Bedrock. Borehole HA18 terminated at 0.3m				
					32.5	1.0							
					32.0	1.5							
						2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Form GEO 5.3 Issue 3 Rev.2 BOREHOLE HAND AUGERS - SITE D.GPJ COFFEY.GDT 25.7.05

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA19***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 34.3

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance					
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E				SP	**SAND:** Fine to coarse grained, dark grey brown, low plasticity clay (<5%).	M			AEOLIAN DUNE OR BEACH DEPOSIT
					34.0			SP	**SAND:** Fine to coarse grained, pale grey yellow brown, low plasticity clay (<5%).		L		
				E		0.5			Hand Auger refusal on Sandstone Bedrock. Borehole HA19 terminated at 0.5m				
					33.5	1.0							
					33.0	1.5							
					32.5	2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — *no resistance ranging to refusal*

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA20***

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 33.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E				SP	**SAND:** Fine to coarse grained, grey brown, low plasticity clay (<5%).	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
					32.5	0.5			Hand Auger refusal on Sandstone Bedrock. Borehole HA20 terminated at 0.1m				
					32.0	1.0							
					31.5	1.5							
					31.0	2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE HAND AUGERS - SITE D.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***HA21***

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/03***

Client: ***NSW Department Of Commerce*** Date started: ***12.10.2004***

Principal: ***NSW Department Of Corrective Services*** Date completed: ***12.10.2004***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AD***

Borehole Location: ***Long Bay Correctional Facility, Malabar NSW, Area D*** Checked by: ***DFD***

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: 34.6

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	None observed	E E	34.5			SP	**SAND:** Fine to coarse grained, grey brown, low plasticity clay (<5%).	M	L		AEOLIAN DUNE OR BEACH DEPOSIT
					34.0	0.5			Hand Auger refusal on Sandstone Bedrock. Borehole HA21 terminated at 0.2m				
					33.5	1.0							
					33.0	1.5							
						2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH95***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK Easting: slope: -90° R.L. Surface: 30.5

hole diameter: 100 mm Northing bearing: datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E	30.0	0.5			**FILL: GRAVELLY SAND:** Fine grained, grey, well graded fine to coarse grey gravel, possibly stabilised.	D / M			Topsoil and grass cover Contains building and domestic waste.
				SPT 5,8,11 N*=19	29.5	1.0			**FILL: GRAVEL:** Poorly graded, coarse, pale yellow, some fine grained sand.				
					29.0	1.5			**FILL: SAND:** Fine to medium grained, brown, trace fine grained gravel.				Sandstone and road base fragments at 1.3m.
					28.5	2.0		SP	**SAND:** Fine to medium grained, orange / yellow.	W	L		AEOLIAN SAND
			▶	SPT 3,4,5 N*=9	28.0	2.5							
					27.5	3.0			Sand becoming pale grey at 3.0m.				
				SPT 4,3,6 N*=9	27.0	3.5							
					26.5	4.0			Borehole CBH95 terminated at 3.95m				
					26.0	4.5							
					25.5	5.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH96**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 31.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E	31.5	0.5			**ASPHALT:** 100mm thick. **FILL:** Gravel - roadbase.	M			PAVEMENT MATERIAL ROADBASE
				SPT 1,2,4 N*=6	31.0	1.0			**FILL: GRAVEL:** Fine grained, grey. **FILL: SILTY SAND:** Medium to coarse grained, brown.				FILL MATERIAL
					30.5	1.5			Pieces of plastic and waste at 1.5m.				
					30.0	2.0							
				SPT 0,1,1 N*=2	29.5	2.5			Some fabric and some plastic refuse at 2.3m.				
					29.0	3.0				W			
					28.5	3.5							
				SPT 4,10,9 N*=19	28.0	4.0		SP	**SAND:** Medium to fine grained, grey / yellow.		MD-L		AEOLIAN SAND

Borehole CBH96 terminated at 3.95m

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support: M mud, C casing, N nil

penetration: 1 2 3 4 — no resistance ranging to refusal

water: 10/1/98 water level on date shown; water inflow; water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH97 / MW1**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 32.1

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT		N		E		32				**FILL: SILTY SAND:** Fine to medium grained, brown.	D		TOPSOIL AND GRASS AT SURFACE.
											M		FILL
				SPT 4,6,5 N*=11		31	1			**FILL:SAND:** Medium grained, pale grey, some fine grained sandstone gravel, trace clay.			
				SPT 3,6,3 N*=9		30	2						
			►			29	3		SP	**SAND:** Medium to coarse grained, pale grey.	W	VL	AEOLIAN SOIL FROM 2.8M VERY LOOSE SATURATED SANDS.
				SPT 0,1,1 N*=2		28	4		ML	**Sandy SILT:** Dark brown to brown, trace rootlets.		VS	SLIGHT ORGANIC SMELL, POSSIBLE PEAT.
						27	5			Borehole terminated at 4.5m			
						26	6						
						25	7						
							8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

► water inflow

◄ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	*firm*
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH98***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N		E	34	1			**FILL: SILT:** Brown, trace subrounded, fine grained gravel, trace subangular, coarse grained gravel.	M			FILL 50mm white PVC conduit discovered with hard augers.
ADT				SPT 15,23,20 N*=43	33				**FILL: SAND:** Fine grained, yellow, some clay, some coarse ripped sandstone gravel. Becoming pale yellow.				
				SPT 7,11,9 N*=20	32	2		SW	**SAND:** Medium to fine grained, dark grey / brown.		MD-L		AEOLIAN SAND
			▶	SPT 1,1,2 N*=3	31	3		SW	**SAND:** Medium to fine grained, grey.	W	VL		
				SPT 9,10,R N*=R	30	4							
					29	5			TC refusal on sandstone. Borehole CBH98 terminated at 4.7m				
					28	6							
					27	7							
						8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	*standard penetration test (SPT)*
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH99**

Sheet 1 of 3

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***16.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***MM***

Coffey

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N		E	34	1			**FILL: SAND:** Fine grained, yellow, with some silt and clay.	D / M			FILL
ADT				SPT 12,14,23 N*=37	33	2			Grading to medium grained, becoming dark grey, with some coarse white sandstone gravel.				
				SPT 12,14,20 N*=34	32	3			**FILL: SANDY CLAY:** Fine to medium grained, mottled orange/grey.				
					31	4		SM	**SILTY SAND:** Fine grained, grey/brown, with some medium to coarse grained sandstone gravel.		D-VD		AEOLIAN SAND
			▶	SPT 12,22,Hammer Bouncing N*=R	30	5			with some clay.				
					29	6		SW	**SAND:** Fine to medium grained, yellow/brown.	W			
					28	7		MH	**CLAYEY SILT:** Low liquid limit, light grey/white, with some fine grained sand.		VSt		RESIDUAL SOILS
					27	8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

► water inflow

◄ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	*standard penetration test* (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	*environmental sample*
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH99**

Sheet 2 of 3

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***16.3.2005***

Date completed: ***16.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N			26	9		MH	**CLAYEY SILT:** Low liquid limit, light grey/white, with some fine grained sand. *(continued)*	W	VSt		RESIDUAL SOILS
				SPT 6,12,17 N*=29	25	10		CH	**CLAY:** High plasticity, grey, with some silt, trace of carbonaceous lenses.				
				SPT 10,10,15 N*=25	24	11							
					23	12							
				SPT 22/140mm N*=R	22	13			Borehole CBH99 continued as cored hole				
					21	14							
					20	15							
					19	16							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH99***

Sheet 3 of 3

Office Job No.: ***E12723/4***

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***16.3.2005***

Date completed: ***16.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects			
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering / alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			26	9		Continued from non-cored borehole						
			25	10								
			24	11								
			23	12								
NMLC			22	13		**NO CORE:** 12.1-12.32m.						
						SANDSTONE/SILTSTONE: Fine grained, grey stained orange brown, indistinctly bedded, highly fractured.	HW		D 0.15 A 0.2	60		JT, IR,RO, 75°, SN orange JT, IR, RO, 75°, SN orange JT, IR, RO, 75°, SN orange
			21	14		**NO CORE:** 13.3-13.5m.				<		
						SANDSTONE/SILTSTONE: Fine grained, grey stained orange brown, indistinctly bedded, highly fractured.	HW		D 0.3 A 0.27 D 0.22 A 0.17	0		Typically recovered as a fine to coarse gravel and cobbles
			20	15		**NO CORE:** 14.6-15.1m.				< 0		
			19	16		CBH99 terminated at 15.1m						

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

roughness
VR very rough
RO rough
SO smooth
SL slickensided

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

coating
CN clean
SN stained
VN veneer
CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH100**

Sheet 1 of 2

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***16.3.2005***

Date completed: ***16.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N		E					**FILL: SANDY SILT:** Brown, with some angular/subangular medium grained gravel.	D			FILL 100mm thick topsoil and grass at surface. 30mm black plastic pipe discovered at 0.3m during hand augering.
					34					M			
ADT				SPT 7,8,8 N*=16		1			**FILL: CLAYEY SAND:** Fine to medium grained, yellow, with some coarse grained, extremely weathered sandstone gravel.				ALS D6, DUB D6
				SPT 13,20,18 N*=38	33	2		SW	**SAND:** Fine to medium grained, dark grey, mottled yellow, with some organic material.		D		AEOLIAN SAND
			►		32	3			becoming light grey.	W	L		
				SPT 4,4,5 N*=9	31	4		SC	**CLAYEY SAND:** Fine to medium grained, clay is of medium plasticity.				RESIDUAL SOIL
					30	5			Borehole CBH100 continued as cored hole				
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH100**

Sheet 2 of 2

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***16.3.2005***

Date completed: ***16.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance						rock mass defects			
method	core-lift	water	RL	depth metres	graphic log core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial		RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness particular	general
			34	1										
			33	2										
		▶	32	3										
			31	4		Continued from non-cored borehole								
NMLC			30	5		**NO CORE:** 4.1-4.95m.								
			29	6		**SANDSTONE:** Coarse grained, pale grey, some distinct cross bedding, 0-30°.	MW		D 0.22	A 0.19	80		JT, 40°, PL, RO, CN. JT, 0°, PL, RO, CN.	PT, 0-20°, PL, RO, VN.
			28	7		Grading to medium to coarse grained, becoming grey, indistinct bedded at 0-20°, trace of carbonaceous material.			D 0.44	A 0.39			XW SM, 5°, PL, Clayey Sand, 10mm.	
			27	8		CBH100 terminated at 7.15m			D 0.71	A 0.93				

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW *distinctly weathered* (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS *crushed seam*

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

roughness
VR very rough
RO rough
SO smooth
SL slickensided

coating
CN clean
SN stained
VN veneer
CO coating

CORED BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH101**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***16.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***16.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E	34	1			**FILL:Silty SAND:** Mottled grey, brown / orange, some subangular fine grained gravel, some subrounded coarse grained, highly weathered sandstone gravel.	M			Topsoil and grass fill at surface. FILL
ADT				SPT 9,13,14 N*=27	33			ML	**Sandy SILT:** Dark brown, some medium grained angular gravel, trace glass fragments, 4mm brick fragment.		S		
				SPT 5,11,15 N*=26		2		SM	**Silty SAND:** Fine to medium grained, dark grey, low plasticity fine.		MD		AEOLIAN SAND
					32	3			Borehole CBH101 terminated at 2.4m				
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH102**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***2.3.2005***

Date completed: ***2.3.2005***

Logged by: ***CFW***

Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
HA / ADT		N	NONE OBSERVED	E	34	1			**FILL: SAND:** Medium to fine grained, orange, some clay, some highly weathered sandstone, subrounded coarse grained gravel.	M			Topsoil and grass cover at surface. FILL
				SPT 10,13,8 N*=21	33	2			**FILL: SILTY SAND:** Fine to medium grained, dark grey, trace glass fragments.				
				SPT 2,3,3 N*=6	32	3		ML	**SANDY SILT:** Dark brown, some roots.		S		Slight organic odour. RESIDUAL
					31	4			Borehole CBH102 terminated at 2.45m				
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH103**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***18.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***18.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E	34	1			**ASPHALT:** 200mm thick.	M			PAVEMENT MATERIAL
									FILL: GRAVELLY SAND: dark grey, medium to fine grained, angular fine grained gravel.				FILL
									FILL: SAND: Fine grained, yellow, some highly weathered sandstone gravel.				
				SPT 9,13,5 N*=18	33	2			**FILL: SAND:** Fine grained, dark grey, some silt, trace glass fragments.				
				SPT 0,0,1 N*=1	32	3		SM	**SILTY SAND:** Fine to medium grained, dark grey-brown.		VS		AEOLIAN SAND
									Borehole CBH103 terminated at 2.45m				
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH104**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***21.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***21.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA / ADT		N	NONE OBSERVED	E	34	1			**FILL: SAND:** Medium to fine grained, orange, some clay, some subrounded, coarse grained, highly weathered sandstone gravel.	M			FILL
								SP	**SAND:** Medium to fine grained, light grey.		L		AEOLIAN SAND
				SPT 3,5 N*=R	33			SC	**Clayey SAND:** Fine to medium grained, light grey / white.				RESIDUAL
									Borehole CBH104 terminated at 1.4m				
					32	2							
					31	3							
					30	4							
					29	5							
					28	6							
					27	7							
						8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	*environmental sample*
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH105**

Sheet 1 of 3

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***18.3.2005***

Date completed: ***18.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA / ADT		N		E	35	0			**TOPSOIL:** Dark brown, with some roots.	M			FILL
									FILL: SAND: Fine to medium grained, yellow/grey, with some subrounded coarse grained, highly weathered sandstone gravel.				Topsoil and grass at surface.
						1							Tree roots at 1m.
					34								
				SPT 7,7,5 N*=12					**FILL: SILTY SAND:** Medium grained, brown/grey, with some subrounded, medium to coarse grained sandstone gravel, trace of subangular, fine and medium grained brown gravel.				
						2			**FILL: SAND:** Fine grained, grey, with some medium grained, moderately weathered white sandstone gravel and medium plasticity clay.				
					33								
				SPT 1,1,1 N*=2				SM	**SILTY SAND:** Fine to medium grained, dark brown, grained sand, with some roots, some clay.		VS-S		AEOLIAN SAND
			►			3				W			
					32								
						4							
				SPT 7,7,5 N*=12	31			SP	**SAND:** Fine to medium grained, grey.		MD		
						5							
					30								
						6							
					29								
						7							
					28								
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH105**

Sheet 2 of 3

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***18.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***18.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***MM***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N			27			SP	**SAND:** Fine to medium grained, grey. *(continued)*	W	MD		
RR					26	9							
						10							
					25			CL/CH	**SANDY CLAY:** Medium plasticity, white, fine to medium grained to coarse quartz sand.		VSt		RESIDUAL SOIL
					24	11							
					23	12							
									Borehole CBH105 continued as cored hole				
					22	13							
					21	14							
					20	15							
						16							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH105**

Sheet 3 of 3

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***18.3.2005***

Date completed: ***18.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects		
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			27									
				9								
			26									
				10								
			25									
				11								
			24									
				12								
			23			Continued from non-cored borehole						
NMLC				13		***NO CORE:*** 12.3-12.33m.	XW / HW		D 0.05 A 0.04	55		PT, PL, SO, 30°.
			22			**SANDSTONE:** Fine grained, pale grey/brown, indistinctly bedded at 5°, occasional thin carbonaceous laminations.						SM, 40mm gravel infill.
												JT, PL, SO, 70°.
						Grading to medium grained, pale grey/brown, cross bedded at 15 degrees.			D 0.13 A 0.05			PT, PL, RO, CN.
				14								PT, PL, RO, CN.
												PT, PL, RO, CN.
			21						D 0.09 A 0.11			PT, PL, RO, CN.
												Extremely Weathered Seam, 20mm.
												PT, PL, SO, CN.
												JT, PL, SO, VN clay.
						CBH105 terminated at 14.3m						PT, PL, SO, CN.
			20	15								
				16								

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

roughness
VR very rough
RO rough
SO smooth
SL slickensided

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

coating
CN clean
SN stained
VN veneer
CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH106**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***21.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***21.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA / ADT		N	NONE OBSERVED	E E SPT 4,5,5 N*=10	34 33	1			**FILL: SAND:** Medium grained, orange, some building waste. Some tile and brick fragments.	M			FILL
								SW	**SAND:** Fine to medium grained, dark brown, some *silt, trace roots.*		L		AEOLIAN
									Borehole CBH106 terminated at 1.65m				
					32	2							
					31	3							
					30	4							
					29	5							
					28	6							
					27	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	*cable tool*
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH107/MW1**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***14.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT		N	NONE OBSERVED			35	0			**ASPHALT:**100mm thick.	M		PAVEMENT MATERIAL
										FILL: CLAYEY SAND: Medium grained, dark grey / brown.			
						34	1		SP	**SAND:** Fine to medium grained, yellow / brown.		L	AELOIAN SAND
						33	2						
									SC	***Clayey SAND:*** *Medium to coarse grained.. Clay medium plasticity.*		MD	EXTREMELY WEATHERED SANDSTONE
						32	3			TC bit refusal. Borehole terminated at 2.7m			
						31	4						
						30	5						
						29	6						
						28	7						
							8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - *sample recovered*
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	*stiff*
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH108**

Sheet 1 of 2

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***14.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***MM***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 32.1

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED		32				**FILL: SANDY SILT:** Brown, fine to coarse grained sand, with some fragments of fibro sheeting.	D			FILL
								SC	**CLAYEY SAND:** Medium to coarse grained, pale yellow and grey, low to medium plasticity clay.	M	MD		RESIDUAL SOIL?
					31	1							
					30	2							
									Borehole CBH108 continued as cored hole				
					29	3							
					28	4							
					27	5							
					26	6							
					25	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH108**

Sheet 2 of 2

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***14.3.2005***

Date completed: ***14.3.2005***

Logged by: ***CFW***

Checked by: ***MM***

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 32.1

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects		
method	core-lift	water	RL	depth metres	graphic log core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			32	0								
				1								
			31									
				2								
		NONE OBSERVED	30			Continued from non-cored borehole						
						NO CORE: 2.3-2.46m.						
				3		**SANDSTONE:** Medium grained, pale grey, indistinctly laminated, 0-20°, occasional fine carbonaceous laminations.	SW		D 0.59 A 0.73			PT, 3°, RO, CN, PL. PT, 3°, PL, RO, CN. PT, 20°, PL, RO, CN PT, 0°, PL, RO, CN.
			29									
				4					D 0.53 A 0.59	90		
			28									
				5		Grading to medium to coarse grained, grey/pale grey, distinctly laminated at 0-20°, trace of quartz nodules up to 5mm.	FR		D 0.28 A 0.48 D 0.49 A 0.53			PT, 0°, PL, RO, CN CS, 5°, IR, 50mm (5.59m to 5.64m) fine gravel filled. PT, 30°, RO, CN, 0mm. PT, 3°, RO, CN, 0mm. PT, 3°, RO, CN, 0mm. PT, 5°, RO, CN, 0mm.
			27									
				6		CBH108 terminated at 5.3m						
			26									
				7								
			25									
				8								

CORED BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.5 Issue 3 Rev. 3

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

roughness
VR very rough
RO rough
SO smooth
SL slickensided

coating
CN clean
SN stained
VN veneer
CO *coating*

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH109**

Engineering Log - Borehole

Sheet 1 of 2

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***14.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***MM***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 33.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED		33			SW	**TOPSOIL: SAND:** Medium grained, dark grey, with some roots.	M	L		TOPSOIL
								SW	**SAND:** Medium grained, grey.				AEOLIAN SAND
					32	1			Borehole CBH109 continued as cored hole				
					31	2							
					30	3							
					29	4							
					28	5							
					27	6							
					26	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH109**

Sheet 2 of 2

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Date started: ***14.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***MM***

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 33.7

hole diameter: 100 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects		
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering / alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			33			Continued from non-cored borehole						
NMLC		NONE OBSERVED		1		**SANDSTONE:** Coarse grained, pale grey and pale orange-brown, distinctly laminated 0-60°.	MW		D 0.07 A 0.12			
			32			**NO CORE:** 1.63-1.73m.			D 0.2 A 0.16			
				2		**SANDSTONE:** Coarse grained, pale grey and pale orange-brown, distinct laminated 0-60°.	MW					JT, 60°, PL, RO, CN.
						NO CORE: 2.13-2.28m.				82		SM, 0°, PL, Sandy Clay, 40mm.
						SANDSTONE: Medium grained, grey and pale grey, indistinct laminations 0-20°, trace of carbonaceous material and quartz nodules (5mm).	SW		D 0.77 A 0.68			JT, 0-20°, PL, RO, CN.
			31	3								PT, 0°, PL, RO, CN.
			30						D 0.23 A 0.62			PT, 15°, CU, RO, CN. PT, 0°, PL, RO, CN
				4		CBH109 terminated at 3.8m						
			29	5								
			28	6								
			27	7								
			26	8								

method

DT	*diatube*
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

core-lift

- casing used
- barrel withdrawn

graphic log/core recovery

- core recovered - graphic symbols indicate material
- no core recovered

water

- *10/1/98 water level* on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss
- water pressure test result (lugeons) for depth interval shown (25)

weathering

FR	fresh
SW	slightly weathered
MW	moderately weathered
HW	highly weathered
XW	extremely weathered
DW	distinctly weathered (covers MW and HW)

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

JT	joint
PT	parting
SM	seam
SZ	sheared zone
SS	sheared surface
CS	crushed seam

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	irregular

roughness

VR	very rough
RO	rough
SO	smooth
SL	slickensided

coating

CN	clean
SN	stained
VN	veneer
CO	coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH110**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBESRVED	E					**FILL: SAND:** Fine to medium grained, brown, some brick rubble.	D			FILL
					35								DUP4 + ALS DUP4
				SPT 4,5,7 N*=12		1				M			TOPSOIL AND GRASS AT SURFACE
					34								
						2							
				SPT 5,7,5 N*=12				SW	**SAND:** Fine to medium grained, grey.		MD-L		AEOLIAN SAND
					33				Borehole CBH110 terminated at 2.45m				
						3							
					32								
						4							
					31								
						5							
					30								
						6							
					29								
						7							
					28								
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH111**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E					**FILL: SILTY SAND:** Fine grained, brown, trace plastic and brick rubble.	M			FILL TOPSOIL - grass at surface
				SPT 4,3,6 N*=9	34	1							
					33	2							
			►	SPT 0,1,1 N*=2	32	3		ML	**SANDY SILT:** Dark brown/black, fine to medium grained sand, some organics.	W	S		RESIDUAL Slight organic odour
								SW	**SAND:** Medium grained, light grey.		L		
				SPT 3,2,7 N*=9	31	4		CL	**Sandy CLAY:** Medium plasticity grey brown, fine to medium grained sand.		St		
					30	5			Borehole CBH111 terminated at 4.45m				
					29	6							
					28	7							
					27	8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	*plastic limit*
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH112/MW1**

Sheet 1 of 1

Engineering Log - Piezometer

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT		N		E		35				**FILL: SILTY SAND:** Fine to medium grained, dark brown, brown.	M		TOPSOIL - grass cover FILL
				SPT 7,3,7 N*=10		34	1			Some brick and steel from 0.5m.			
				SPT 5,8,12 N*=20		33	2			**FILL:SAND:** Medium grained, dark brown/grey, trace sandstone gravel. Concrete floater at 2.0m.			DUP1
			▶	SPT 5,5,5 N*=10		32	3		SW	**SAND:** Fine to medium grained, light grey, trace silt.	W	MD-L	AEOLIAN SAND
							4		SW	**SAND:** Medium grained, grey/brown.			
				E		31			CH	**SANDY CLAY:** Medium to high plasticity, light grey, fine to medium grained sand.		F	RESIDUAL
				SPT 5,5,5 N*=10									
						30	5			Borehole terminated at 4.5m			
						29	6						
						28	7						
							8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH113**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E	35	1			**FILL: SANDY SILT:** Brown, low plasticity fines, fine grained sand, some angular fine grained gravel and asphalt. Brick fragments thgoughout.	D			FILL TOPSOIL - grass cover.
				SPT 1,1,1 N*=2						M			
					34	2		SW	**SAND:** Fine to medium grained, red-brown.		MD		AEOLIAN SAND
				SPT 5,6,5 N*=11									
								SP	**SAND:** Fine to medium grained, pale yellow. Borehole CBH113 terminated at 2.45m				
					33	3							
					32	4							
					31	5							
					30	6							
					29	7							
					28	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	*cable tool*
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH114**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL:SILTY SAND:** Fine to medium sand, brown to grey-brown. Some domestic waste including fabric material and plastic.	M			TOPSOIL - grass cover at surface FILL
				SPT 6,5,6 N*=11	35	1							
				SPT 2,3,2 N*=5	34	2							
								SW	**SAND:** Fine to medium grained, pale grey.		MD		AEOLIAN SAND
				SPT 5,8,7 N*=15	33								
					32	3			Borehole CBH114 terminated at 2.75m				
					31	4							
					30	5							
					29	6							
					28	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH115**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E					**FILL: SILTY SAND:** Medium to coarse grained, grey.	M			FILL TOPSOIL - grass cover
					34	1			Fill contrains trace plastic sheet, some brick fragments, trace sandstone gravel.				
				SPT 6,8,7 N*=15					Stiff plastic sheet 1 mm thick.				
									Steel rod 200mm long, 5mm thick, trace roots.				
					33	2			Concrete floater.				
			►							W			
				SPT 4,3,7 N*=10	32	3							
								SW	**SAND:** Fine to medium grained, light grey.		L		RESIDUAL
								CH	**CLAY:** Medium plasticity, light grey.		F		
					31	4							
				SPT 10,11,17 N*=28					**SANDSTONE:** Light grey.		VD		HIGHLY WEATHERED SANDSTONE
									Borehole CBH115 terminated at 4.45m				
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH116**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***10.3.2005***

Date completed: ***10.3.2005***

Logged by: ***CFW***

Checked by: ***AJB***

Coffey

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N		E					**FILL: SANDY SILT:** Brown, fine grained sand.	M			TOPSOIL - grass at surface
													DUP2, ALS DUP2
				SPT 3,4,R N*=R	35	1			Brick rubble throughout.				SPT refusal on brick fill
								SW	**SAND:** Fine to medium grained, light grey.		L		AEOLIAN SAND
				SPT 3,4,2 N*=6	34	2			Iron cemented sand red-brown from 1.8m (coffee rock).		MD		Environmental sample 1.5m - 1.8m
			►	SPT 3,5,5 N*=10	33	3				W			
					32	4			Borehole CBH116 terminated at 2.95m				
					31	5							
					30	6							
					29	7							
					28	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH117***

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SAND:** Fine to medium grained, grey/brown, trace gravel, trace asphalt, trace roots.	M			TOPSOIL and grass at surface FILL
				SPT 7,5,5 N*=10	35	1			Some gravel and cobbles to 70 mm in diameter.				
				SPT 2,1,4 N*=5	34	2		SW	**SAND:** medium grained, yellow/brown.		MD		AEOLIAN SAND
				SPT 5,6,6 N*=12	33	3			Borehole CBH117 terminated at 2.95m				
					32	4							
					31	5							
					30	6							
					29	7							
					28	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH118**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***11.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N		E					**FILL:Silty SAND:** Fine to medium grained, brown, trace roots, some glass fragments to 5mm.	M			TOPSOIL - grass roots at surface DUP3, ALS, DUP3
				SPT 4,4,R N*=R	34	1							SPT refusal on boulder
				SPT 4,8,8 N*=16	33	2			Sandstone and gravel cobbles to 50mm in diameter.				
				SPT 2,1,1 N*=2	32	3		ML	**Sandy SILT:** Black, sand fine to medium grained, some organic matter.		VS		PEAT moderate organic smell
			▶		31	4		SW	**SAND:** Medium grained, light grey.	W	MD		AEOLIAN SAND
									Borehole CBH118 terminated at 4m				
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH119/MW1**

Engineering Log - Piezometer

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***10.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

drill model & mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 36.0

hole diameter: | Northing: | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	well details	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	structure and additional observations
ADT		N		E						**FILL: SILTY SAND:** Fine to medium grained, brown to gery-brown.	D M		Topsoil and grass at surface FILL
				SPT 6,6,5 N*=11		35	1						
				SPT 2,4,3 N*=7		34	2			**FILL: GRAVELLY SAND:** Fine to medium grained, brown coarse gravel.			
									SW	**SAND:** Fine grained, grey.		L	AEOLIAN SAND
			▶	SPT 10,R,- N*=R					SC	**CLAYEY SAND:** Fine grained, red brown, low plasticity clay, iron cemented.	W	D	SPT refused on coffee rock band at 2.7m
						33	3		SW	**SAND:** Fine to medium grained, grey.			
				SPT 6,7,8 N*=15		32	4						
									CH	**SANDY CLAY:** Medium to high plasticity, grey.		VSt	RESIDUAL
						31	5						
										Borehole terminated at 5m			
						30	6						
						29	7						
						28	8						

PIEZOMETER E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.10 Issue 3 Rev.0

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

C casing N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

▼ 10/1/98 water level on date shown

▶ water inflow

◀ water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressure meter
Bs	bulk sample
R	refusal
E	environmental sample
PID	PID measurement
WS	water sample
PZ	piezometer

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH120**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***10.3.2005***

Date completed: ***10.3.2005***

Logged by: ***CFW***

Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 35.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SANDY SILT:** Brown, fine grained sand.	M			TOPSOIL at the surface. FILL
					35	1							
				SPT 0,1,3 N*=4					Fragments of rotted wood at 1.0m.				
					34	2							
				SPT 4,5,3 N*=8									
					33	3		SW	**SAND:** Medium to coarse grained, brown.		MD		AEOLIAN
				SPT 4,5,6 N*=11					Becoming grey with depth.				
									Borehole CBH120 terminated at 2.95m				
					32	4							
					31	5							
					30	6							
					29	7							
					28	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH121**

Engineering Log - Borehole

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***10.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***10.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 34.9

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine to medium grained, brown.	M			TOPSOIL - grass at surface FILL
				SPT 1,1,1 N*=2	34	1							
									FILL: GRAVELLY SAND: Fine to medium grained, yellow/pale grey, sandstone gravel to 30mm, 60mm glass shard.				
				SPT 1,2,3 N*=5	33	2		SW	**SAND:** Fine to medium grained, pale grey.		L		AEOLIAN
				SPT 3,6,6 N*=12	32	3					MD		
									Borehole CBH121 terminated at 2.95m				
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH122**

Sheet 1 of 2

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Date started: ***11.3.2005***

Date completed: ***11.3.2005***

Logged by: ***SG/SD***

Checked by: ***MM***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 42.6

hole diameter: 125 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N							**BASE COURSE: CONCRETE:** 200mm thick.				PAVEMENT MATERIAL
				E + DUPS					**SUB BASE COURSE: SAND:** Medium to coarse grained, pale brown, quartz sand.	M			
								SP	**SAND:** Medium to coarse grained, yellow/brown, trace of silt.		L		AEOLIAN SAND
				SPT 2,3,4 N*=7	42	1			becoming pale brown with depth.				
									SANDSTONE: Soil strength, extremely weathered, medium to coarse grained, pale brown/grey and yellow.		VD		BEDROCK
			NONE OBSERVED		41	2			Borehole CBH122 continued as cored hole				
					40	3							
					39	4							
					38	5							
					37	6							
					36	7							
					35	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH122**

Sheet 2 of 2

Office Job No.: **E12723/4**

Engineering Log - Cored Borehole

Client: ***Department of Commerce***

Date started: ***11.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***11.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***SG/SD***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area B.***

Checked by: ***MM***

drill model & mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 42.6

hole diameter: 125 mm | Drilling fluid: | Northing: | bearing: | datum: AHD

drilling information					material substance					rock mass defects		
method	core-lift	water	RL	depth metres	graphic log / core recovery	material: rock type; grain characteristics, colour, structure, minor components	weathering alteration	estimated strength VL L M H VH EH	$Is_{(50)}$ MPa D- diametral A- axial	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: type, inclination, planarity, roughness, coating, thickness — particular / general
			42	1		Continued from non-cored borehole						
NMLC		NONE OBSERVED				**NO CORE:** 1.35-1.52m.						
			41	2		**SANDSTONE:** Coarse grained, pale grey, massive.	SW		D 0.39 A 0.3			— JT, 70°, PL, RO, CN. — PT, 0-15°, CU, RO, VN clay.
			40	3		becoming pale yellow with carbonaceous laminae	HW/MW		D 0.17 A 0.17	79		— PT, 10°, ST, RO, CN. — PT, 10°, IR, VRO, CO clay.
			39	4		**SHALE:** Dark grey **SANDSTONE:** Medium to coarse grained, banded pale grey and grey, distinctly laminated at 0 - 15 degrees, trace of carbonaceous laminae.	SW/FR		D 1.11 A 0.94 D 0.63 A 0.85			JT, 90°, PL, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. JT, 70°, PL, RO, CN. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay. PT, 0-15°, CU, RO, VN clay.
			38	5		CBH122 terminated at 4.35m						
			37	6								
			36	7								
			35	8								

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
NMLC NMLC core
NQ, HQ, PQ wireline core

core-lift
casing used
barrel withdrawn

graphic log/core recovery
core recovered - graphic symbols indicate material
no core recovered

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss
25 water pressure test result (lugeons) for depth interval shown

weathering
FR fresh
SW slightly weathered
MW moderately weathered
HW highly weathered
XW extremely weathered
DW distinctly weathered (covers MW and HW)

strength
VL very low
L low
M medium
H high
VH very high
EH extremely high

defect type
JT joint
PT parting
SM seam
SZ sheared zone
SS sheared surface
CS crushed seam

planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular

roughness
VR very rough
RO rough
SO smooth
SL slickensided

coating
CN clean
SN stained
VN veneer
CO coating

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH128**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | Easting: | slope: -90° | R.L. Surface: 37.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: GRAVELLY SAND:** Medium to coarse grained, mottled pale grey/dark grey. Sand medium to coarse grained. Gravel grades up to 20mm.	M			FILL TOPSOIL - grass cover at surface
				E	36	1							
				E	35	2							
				E					**SAND:** Fine to medium grained, yellow.		L		AEOLIAN
					34	3			Borehole CBH128 terminated at 2.65m				
					33	4							
					32	5							
					31	6							
					30	7							
					29	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH129**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***14.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: GRAVELLY SILTY SAND:** Fine to medium grained, dark grey, basalt gravel.	D			FILL
				E	34	1		SW	**SILTY SAND:** Fine to medium grained, dark orange/brown, well graded.	M	MD		AEOLIAN SAND
				E	33	2		SP	**SAND:** Medium to coarse grained, pale yellow/brown.				
				E	32	3			Borehole CBH129 terminated at 3m				
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH130**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***14.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 35.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL:SILTY SAND:** Fine to medium grained, grey, trace to some basalt gravel and plastic bags.	D			FILL
					34	1		SM	**SILTY SAND:** Fine to medium grained, dark red/brown.	M	MD		AEOLIAN SAND Some iron indurated sands
				E									
					33	2			Borehole CBH130 terminated at 1.45m				
					32	3							
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
*bit shown by suffix
e.g. ADT

support
M mud N nil
C casing

penetration
1 2 3 4
no resistance ranging to refusal

water
10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
V vane shear (kPa)
P pressuremeter
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH131**

Engineering Log - Borehole

Sheet 1 of 1
Office Job No.: **E12723/4**

Client: ***Department of Commerce***
Date started: ***14.3.2005***

Principal: ***Department of Corrective Services***
Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation***
Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***
Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 32.0
hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance					
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV		N	NONE OBSERVED	E E E	31	1			**FILL:SILTY SAND:** Fine to medium grained, dark grey/dark brown, some fine to coarse grained gravel.	D			FILL - Topsoil and grass cover at surface Bricks observed 0.2m - 0.4m
								SP	**SAND:** Fine to medium grained, dark grey to dark brown.	M	MD		AEOLIAN SAND
					30	2			Borehole CBH131 terminated at 2m				
					29	3							
					28	4							
					27	5							
					26	6							
					25	7							
					24	8							

method
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
*bit shown by suffix
e.g. ADT

support
M mud N nil
C casing

penetration
1 2 3 4
no resistance ranging to refusal

water
10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
V vane shear (kPa)
P pressuremeter
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH132**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Date started: ***14.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***14.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 33.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**ASPHALT:** 150mm thick.	M			PAVEMENT MATERIAL
					33				**FILL: GRAVEL:** Coarse grained, dark grey.				
				E		1			**FILL: SAND:** Medium grained, yellow, some angular gravel 30mm. Scraps of metal observed at 1.0m.				FILL
					32								
				E		2							
				E							MD		AEOLIAN SAND
					31			SP	**SAND:** Fine to medium grained, pale grey. Borehole CBH132 terminated at 2.45m				
						3							
					30								
						4							
					29								
						5							
					28								
						6							
					27								
						7							
					26								
						8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration

1 2 3 4 no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH133**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***14.3.2005***

Date completed: ***14.3.2005***

Logged by: ***CFW***

Checked by: ***AJB***

Coffey

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 33.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine to medium grained, dark grey/dark brown, some fine to coarse grained gravels (<10%).	D			FILL - GRASS COVER
				E	32	1							
								SP	**SAND:** *Fine to medium grained, pale yellow/pale brown.*	M	MD		AEOLIAN SAND
				E	31	2							
									Borehole CBH133 terminated at 2m				
					30	3							
					29	4							
					28	5							
					27	6							
					26	7							
					25	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH134**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***15.3.2005***

Date completed: ***15.3.2005***

Logged by: ***CFW***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E	34	1			**FILL:Sandy SILT:** Dark brown, fine to medium grained sand, some fine to medium grained angular gravel.	D / M			FILL Topsoil and grass at surface
ADT				E	33	2			Fill contains rubbish, domestic waste, thin plastic, metal fragments.				
				E	32	3		SW	**SAND:** Fine to medium grained, dark brown.		MD		AEOLIAN SAND
				E	31								
					30	4			Borehole CBH134 terminated at 3.5m				
					29	5							
					28	6							
					27	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH135***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N		E					**FILL:Sandy SILT:** Brown, fine to medium grained sand, some fine to medium grained angular gravel.	D			TOPSOIL, grass roots
					34					M			FILL
				E		1							
ADT													
					33				Some brick fragments.				
				E		2							
					32			SW	**SAND:** Fine to medium grained, pale grey.		L		AEOLIAN SAND
			►			3		SW	**SAND:** Fine to medium grained, dark grey, some carbonaceous material.	W			
					31								
				E				SP	**SAND:** Fine to medium grained, grey.		MD		
						4			Borehole CBH135 terminated at 3.7m				
					30								
						5							
					29								
						6							
					28								
						7							
					27								
						8							

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH136***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 36.0

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine grained, dark brown/grey, some coarse ripped sandstone gravel.	M			TOPSOIL - grass FILL
								SP	**SAND:** Fine to medium grained, light grey.		L		AEOLIAN SAND
				E	35	1							
									Borehole CBH136 terminated at 1.4m				
					34	2							
					33	3							
					32	4							
					31	5							
					30	6							
					29	7							
					28	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH137**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 37.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED	E	37	1			**FILL: SILTY SAND:** Medium grained, dark grey/brown, some subangular ripped sandstone gravel, some sandstone cobbles.	M			TOPSOIL - grass at surface DUP D5 and ALS D5
				E				SP	**SAND:** Fine to medium grained, light grey, trace carbonaceous material.		L		AEOLIAN SAND
					36	2			Borehole CBH137 terminated at 1.4m				
					35	3							
					34	4							
					33	5							
					32	6							
					31	7							
					30	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	*pressuremeter*
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH138***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***15.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 31.8

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
HA		N	NONE OBSERVED		31	1			**FILL:SILTY SAND:** Fine to medium grained, some angular coarse gravel. Concrete block 100 mm, tile, scrap steel, plastic.	D M			FILL- grass cover at surface
				E									
					30	2		SW	**SAND:** Fine to medium grained, light grey.		L		AEOLIAN SAND
				E				SW	**SAND:** Fine to medium grained, dark brown/black, some organic material.				
									Borehole CBH138 terminated at 2.2m				
					29	3							
					28	4							
					27	5							
					26	6							
					25	7							
					24	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH139**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***15.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***15.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***CFW***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: GEMCO TRUCK | Easting: | slope: -90° | R.L. Surface: 31.8

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E	31	1			**FILL:SILTY SAND:** Medium grained, brown, some coarse angular gravel.	D			TOPSOIL - grass cover FILL
									Brick fragments.	M			
				E	30	2			Glass fragments.				
			▶	E				SW	**SAND:** Fine to medium grained, light grey.		L		AEOLIAN SAND
								SW	**Silty SAND:** Fine to medium grained, dark brown, trace roots.	W	MD		
					29	3			Borehole CBH139 terminated at 2.5m				
					28	4							
					27	5							
					26	6							
					25	7							
					24	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH140**

Sheet 1 of 1

Office Job No.: **E12723/4**

Engineering Log - Borehole

Client: ***Department of Commerce***

Date started: ***17.3.2005***

Principal: ***Department of Corrective Services***

Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation***

Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Checked by: ***AJB***

drill model and mounting: MOLE TRUCK | *Easting:* | *slope:* -90° | R.L. Surface: 34.9

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine to medium grained, dark brown/grey, low liquid limit silt. Some wire.	D			GRASS COVER AT SURFACE FILL. DUP5
				SPT 2,2,1 N*=3	34	1		SC	**CLAYEY SAND:** Fine to medium grained, dark brown, low plasticity clay.	M	L		RESIDUAL
				F					Borehole CBH140 terminated at 1.5m				
					33	2							
					32	3							
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	*hand auger*
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH141***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***17.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE P80 TRUCK | Easting: | slope: -90° | R.L. Surface: 34.7

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt. Pieces of bricks, concrete, sandstone, broken glass observed from 0.4m - 1.0m	D			TOPSOIL AND GRASS AT SURFACE FILL
				SPT 6,5,4 N*=9	34	1							
				E	33			SC	**CLAYEY SAND:** Fine to medium grained, brown/dark brown, low plasticity clay.	M	MD		RESIDUAL
						2			Borehole CBH141 terminated at 1.75m				
					32	3							
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH142**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***17.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE P80 TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information							material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E	34	1			**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	D			*Topsoil and grass at surface* FILL
				E					Pieces of bricks, sandstone, plastic and tiles observed throughout the fill.	M			Increase in moisture with depth
					33	2			Refusal due to concrete in fill. Borehole CBH142 terminated at 1.4m				No SPT's due to building waste material in fill
					32	3							
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. **CBH143**

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***17.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE P80 TRUCK | Easting: | slope: -90° | R.L. Surface: 34.5

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N	NONE OBSERVED	E					**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	D			Topsoil and grass at surface FILL
				E	34	1			Pieces of bricks, concrete, sandstone, plastic, wire, concrete, PVC pipe, steel observed throughout fill.				
					33								No SPT 0.5m due to materials in the fill.
				SPT 2,3,3 N*=6		2		SC	**CLAYEY SAND:** *Fine to medium grained,* brown/dark brown, low plasticity clay.	M	L		RESIDUAL
					32	3			Borehole CBH143 terminated at 2.15m				
					31	4							
					30	5							
					29	6							
					28	7							
					27	8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE E12723.4 AREA A-B-C-D 2005 INVESTIGATION.GPJ COFFEY.GDT 25.7.05

Form GEO 5.3 Issue 3 Rev.2

Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***CBH144***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***17.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***17.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Borehole Location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

drill model and mounting: MOLE P80 TRUCK | Easting: | slope: -90° | R.L. Surface: 35.1

hole diameter: 100 mm | Northing | bearing: | datum: AHD

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADT		N		E	35				**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	D			Topsoil and grass at surface FILL
				E					Pieces of bricks and sandstone in the fill.				
				SPT 2,2,2 N*=4	34	1							
			►	E				SC	**CLAYEY SAND:** Fine to medium grained, brown/dark brown/grey, low plasticity clay.	W	L		RESIDUAL
						2			Borehole CBH144 terminated at 1.95m				
					33								
					32	3							
					31	4							
					30	5							
					29	6							
					28	7							
						8							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix	
e.g.	ADT

support

M mud N nil

C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. **CTP1**

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***22.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***22.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 0.3 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to medium grained. Dark grey / dark brown, low liquid limit silt. Abundant building waste materials observed. Bricks (<25%), asphalt (<5%), plastic (<5%), sandstone boulders (<15%), roof tiles (<5%), wire (<5%), shale (<5%), PVC conduit (<5%), concrete (<10%), aluminium cans (<5%). Fibro cement sheeting potentially containing asbestos (<10%).	D			*FILL. Grass Cover. Potential asbestos containing material sampled at 1 m depth.*
				E	1.0							
					1.5		SC	**CLAYEY SAND:** Fine to medium grained, grey and brown, low plasticity clay.	M	MD		RESIDUAL
				E	2.0							
					2.5			Test pit CTP1 terminated at 2.2m				
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and *soil description* based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP2***

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***22.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***22.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface: 2.3 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to medium grained sand, dark grey / dark brown.	D			FILL. Grass Cover at surface.
				E	1.0			**FILL: SILTY SAND:** Fine to medium grained sand, dark brown. Abundant building waste materials. Observed: Bricks (<20%), sandstone boulders (<15%), concrete (<10%), granite blocks (<5%), wire (<5%), ceramic pipe (< 5%), concrete blocks up to 8mm diamater (<10%), PVC conduit (<5%). electrical cable (<5%), (<5%), roof tiles (<5%), steel shelving (<5%).	M			
				E	1.5							
				E	2.0							
				E	2.5							
				E	3.0							DUP 5. MAXIMUM SAFE REACH OF EXCAVATOR.
					3.5			Test pit CTP2 terminated at 3.2m				
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. ***CTP3***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***22.3.2005***

Date completed: ***22.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface:

excavation dimensions: m long m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to medium grained sand, dark grey / dark brown. Abundant building waste materials observed: Bricks (<20%), steel reinforcements (<5%), tiles (<5%), plastic (<5%), asphalt (<5%), rubber tyre, concrete blocks up to 0.6 diameter (<5%), metal sheeting (<5%), pieces of ceramic pipe	D			Grass Cover. FILL.
				E	1.0							
					1.5							
				E	2.0							
					2.5			Test pit CTP3 terminated at 2.4m				
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description
based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. **CTP4**

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***22.3.2005***

Date completed: ***22.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 2.3 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to medium grained sand, dark grey. Building waste materials, bricks (<15%), sandstone boulders (<10%), tiles (<5%), glass (<5%), steel reinforcements (<5%), plastic (<5%), metal sheeting (<5%), wire (<5%), concrete blocks up to 0.6m diameter (<5%) fencing (<5%), sandstone boulders (<5%), increase in concrete blocks from 1.8m	D			FILL.GRASS COVER
				E	1.0							
					1.5							
				E	2.0							
					2.5							
					3.0			Test pit refused on concrete. Test pit CTP4 terminated at 2.7m				
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP5***

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***22.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***22.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface: 0.2 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E		0.5			**FILL:SILTY SAND:** Fine to medium grained sand, dark brown / dark grey, low liquid limit silt, some gravel fine to medium grained. Building waste materials observed. Concrete blocks up to 0.5m diameter (<5%), bricks (<10%), tiles (<5%), asphalt (<5%)	D			GRASS COVER. FILL.
				E		1.0			**FILL:SILTY SAND** Fine to medium grained sand, dark brown, low liquid limit silt. Building waste.	M			
				E		1.5							
						2.0		SW	**SILTY SAND:** Fine to medium grained sand, low liquid limit silt.		MD		AEOLIAN SAND
						2.5			Test pit CTP5 terminated at 2.5m				
						3.0							
						3.5							
						4.0							

Sketch

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
S shoring N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
V vane shear (kPa)
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP6***

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***23.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***23.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface:

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0		SM	**FILL: SILTY SAND:** Fine to medium grained sand, dark grey / dark brown, low liquid limit silt.	M	L		Grass Cover. FILL. AEOLIAN SAND
				E	0.5			**SILTY SAND:** Fine to medium grained sand, pale grey, low liquid limit silt.				
								CTP6 terminated at 0.6m Test pit CTP6 terminated at 0.6m				
					1.0							
					1.5							
					2.0							
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. **CTP7**

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***23.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***23.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface:

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0			**FILL: SILTY SAND:** Fine to to medium grained grey to dark grey / dark brown, low liquid limit silt, some gravels medium to coarse grained gravels.	M			FILL. Grass Cover.
				E	0.5			**SILTY SAND:** Fine to medium grained, pale grey, *low liquid limit silt.*		VL		RESIDUAL
								Test pit CTP7 terminated at 0.6m				
					1.0							
					1.5							
					2.0							
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R *refusal*

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP8***

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***23.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***23.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface:

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0			**FILL:SILTY SAND:** Fine to medium grained, grey to dark grey, low liquid limit silt. Some building waste materials inlcuding brick, sandstone boulder, steel, tiles, metal, ceramic pipe.	M			FILL. Grass Cover
					0.5			**SILTY SAND:** Fine to medium grained, pale grey / white, low liquid limit silt.		MD		RESIDUAL
				E	1.0			Test pit CTP8 terminated at 1m				
					1.5							
					2.0							
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
V vane shear (kPa)
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. **CTP10**

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***23.3.2005***

Date completed: ***23.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 2.2 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E		0.5			**FILL: SILTY SAND:** Fine to coarse grained, dark grey to black, low liquid limit silt.	M			TOPSOIL. FILL.
				E		1.0			**FILL: SILTY SAND:** Fine to coarse grained, black, pale grey to grey, *low liquid limit silt, some* fine to medium grained gravels.				Bricks (<5%), sandstone boulders up to 0.2m diameter (<5%).
				E		1.5			**FILL: SILTY SAND:** Fine to medium grained, dark grey / black.				
				E		2.0		SM	**SILTY SAND:** Fine to medium grained, brown / pale grey to grey.		MD		AEOLIAN SAND.
						2.5							
						3.0			Test pit CTP10 terminated at 3m				
						3.5							
						4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. **CTP11**

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: **E12723/4**

Client: ***Department of Commerce***
Date started: ***23.3.2005***

Principal: ***Department of Corrective Services***
Date completed: ***23.3.2005***

Project: ***Environmental/Geotechnical Investigation***
Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***
Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 2.2 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E		0.0			**FILL: SILTY SAND:** Fine to medium grained, dark grey / black, low liquid limit silt.	M			TOPSOIL/FILL
				E					**FILL: SILTY SAND:** Fine to coarse grained, brown to dark brown, low liquid limit silt.				Sandstone boulders up to 0.4m diameter (<5%), concrete (<5%), bricks (<5%)
				E		0.5			**FILL: SILTY SAND:** Fine to medium grained, dark grey, low liquid limit silt.				
						1.0							
						1.5							
						2.0							
				E				SM	**SILTY SAND:** Fine to medium grained, pale brown to brown, grey, low liquid limit silt.		L		AEOLIAN SAND
								SM	**SILTY SAND:** Fine to medium grained, brown and pale yellow, low liquid limit silt.				
				E		2.5							
									Test pit CTP11 terminated at 2.7m				
						3.0							
						3.5							
						4.0							

Sketch

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
S shoring N nil

penetration 1 2 3 4
no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
V vane shear (kPa)
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP12***

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***23.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***23.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface: 2.5 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to coarse grained, dark grey, low liquid limit silt.	M			TOPSOIL / FILL.
					1.0			**FILL: SILTY SAND:** Fine to coarse grained, dark gre, low liquid limit silt.				FILL. Bricks (<5%), Sandstone (<5%).
				E	1.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, grey / brown, fine coarse grained gravels.				FILL. A variety of building waste materials observed. Timber (<5%), bricks (<10%), metal (<5%), wire (<5%), plastic (<5%), foam (<5%), sandstone boulders up to 0.2m diameter (<5%).
				E	2.0		SM	**SILTY SAND:** Fine to medium grained, grey / brown, low liquid limit silt.		MD		AEOLIAN SAND
					2.5							REFUSAL ON SANDSTONE
					3.0			Test pit CTP12 terminated at 3m				
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP13***

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***24.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***24.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface: 1.5 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0			**FILL: SILTY SAND:** Fine to medium grained, dark grey / black, low liquid limit silt.	M			TOPSOIL/ FILL.
				E + DUPS	0.5			**FILL: SILTY SAND:** Fine to coarse grained, grey / black, low liquid limit silt.				Bricks (<5%), plastic (<5%), tiles(<5%).
				E			SM	**SILTY SAND:** Fine to medium grained, pale black, low liquid limit silt.		VL		AEOLIAN SAND
					1.0			Test pit CTP13 terminated at 0.9m				
					1.5							
					2.0							
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. ***CTP14***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***24.3.2005***

Date completed: ***24.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 2.5 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0			**FILL: SILTY SAND:** Fine to medium grained, dark grey / black, low liquid limit silt.	M			TOPSOIL/FILL
								FILL: SILTY SAND: Fine to medium grained, dark grey, low liquid limit silt. Building waste material: plastic (<5%), bricks (<15%), sandstone boulders up to 0.3m diameter (<5%), timber (<5%).	D			FILL
					0.5							
				E	1.0							
				E				**FILL: SILTY SAND:** Fine to coarse grained, grey, low liquid limit silt.				
					1.5			**GRAVELLY SAND:** Fine to coarse grained, grey / black, fine to medium grained gravels.				
				E	2.0							
					2.5			Test pit CTP14 terminated at 2.5m				
					3.0							
					3.5							
					4.0							

Sketch

TESTPIT E12723.4 AREA B&D PHASE 2 - 2005 TEST PITS ONLY.GPJ COFFEY.GDT 25.7.05

Form GEO 5.2 Issue 3 Rev.2

method

N	natural exposure
X	existing excavation
BH	backhoe bucket
B	bulldozer blade
R	ripper
E	excavator

support

S shoring N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
V	vane shear (kPa)
Bs	bulk sample
E	environmental sample
R	*refusal*

classification symbols and soil description based on unified classification system

moisture

D	dry
M	*moist*
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP15***

Engineering log - Excavation

Sheet 1 of 1
Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***24.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***24.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface: 1.5 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	depth metres (RL)	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.0			**FILL: SILTY SAND:** Fine to coarse grained, dark grey, low liquid limit silt, trace of low plasticity clay.	M			TOPSOIL/FILL
					0.5			**FILL: SILTY SAND:** Fine to coarse grained, dark grey, some fine to coarse grained gravel. Some building waste materials: Bricks (<5%), Timber (<5%), Sandstone boulders up to 0.2m diameter (<5%), plastic (<5%).				
				E	1.0							
				E	1.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, pale yellow and brown, fine to coarse grained gravels.				
				E				**FILL: GRAVELLY SAND:** Fine to coarse grained, grey, fine to medium grained gravel.				SOME ASH NOTED AT 1.6m.
				E	2.0		SM	**SILTY SAND:** Fine to coarse grained, pale yellow, brown and grey, low liquid limit silt.		MD		AEOLIAN SAND
					2.5			Test pit CTP15 terminated at 2.2m				
					3.0							
					3.5							
					4.0							

Sketch

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
V vane shear (kPa)
Bs bulk sample
E environmental sample
R refusal

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W wet
Wp plastic limit
W_L liquid limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. ***CTP16***

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***24.3.2005***

Date completed: ***24.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface: 1.5 AGL

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to medium grained, dark grey / black, low liquid limit silt.	M			TOPSOIL / FILL
								FILL: SILTY SAND: Fine to medium grained, dark grey, low liquid limit silt. Building waste material: hose (<5%), foam (<5%), bricks (<10%), ceramic pipe (<5%), steel reinforcement (<5%), sandstone boulders up to 0.2m diameter (<5%), timber (<5%).	D			
				E	1.0							
				E	1.5			**FILL: GRAVELLY SAND:** Fine to coarse grained, grey / black, fine to medium gravels.				REFUSAL ON SANDSTONE
					2.0			Test pit CTP16 terminated at 1.7m				
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. **CTP17**

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce*** Date started: ***24.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***24.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator *Pit Orientation:* Easting: m R.L. Surface: 1.5 AGL

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	NONE OBSERVED	E	0.5			**FILL: SILTY SAND:** Fine to coarse grained, dark grey, low liquid limit silt.	M			FILL. Some building waste materials: Bricks (<5%), ceramic pipe (<5%), sandstone boulders up to 0.2m diameter (<5%). Visually poorly compacted.
				E	1.0			**FILL: SILTY SAND:** Fine to coarse grained, grey / brown, low liquid limit silt.				Fibro cement sheeting potentially containing asbestos as defected at 1.7m.
				E	1.5			**FILL: GRAVELLY SAND:** Fine to course grained, dark grey / dark brown, fine to medium grained gravels.				Increase in building waste materials at approximately 2.0m. Bricks (<35%), Plastic (<5%), concrete blocks up to 0.4m diameter (<5%), metal sheeting (<5%), wire (<5%), electrical wire (<5%), metal conduit (<5%), aluminium cans (<5%), ceramic pipe (<5%).
				E	2.0							
				E	2.5							
				E	3.0				W			
				E	3.5							
				E	4.0							
								Test pit CTP17 terminated at 4m				

Sketch

TESTPIT E12723.4 AREA B&D PHASE 2 - 2005 TEST PITS ONLY.GPJ COFFEY.GDT 25.7.05

Form GEO 5.2 Issue 3 Rev.2

method

N	natural exposure
X	existing excavation
BH	backhoe bucket
B	bulldozer blade
R	ripper
E	excavator

support

S shoring N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
V	vane shear (kPa)
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering log - Excavation

Excavation No. **CTP18**

Sheet 1 of 1

Office Job No.: **E12723/4**

Client: ***Department of Commerce***

Principal: ***Department of Corrective Services***

Project: ***Environmental/Geotechnical Investigation***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.***

Date started: ***24.3.2005***

Date completed: ***24.3.2005***

Logged by: ***AG***

Checked by: ***AJB***

Coffey

equipment type and model: Hyundai 5 1/2 ton excavator | Pit Orientation: | Easting: m | R.L. Surface:

excavation dimensions: 2m long 0.6m wide | Northing: m | datum: GROUND LEVEL

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N		E		0.0			**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	M			FILL
				E		0.5			**FILL: SANDY GRAVEL:** Fine to coarse grained, grey, medium to coarse grained sands.				Fill. Abundant building waste materials from 0.4m depth observed. Bricks (<15%), plastic (<5%), electrical wire (<5%), plastic pots (<5%), metal conduit (<5%), garbage bags (<5%), timber (<5%), milk crates (<5%), foam (<5%).
			▶	E		1.0			**FILL: GRAVELLY SAND:** Fine to coarse grained, dark grey / dark brown.	W			REFUSAL ON SANDSTONE
						1.5			Test pit CTP18 terminated at 1.3m				
						2.0							
						2.5							
						3.0							
						3.5							
						4.0							

Sketch

method

N	natural exposure
X	existing excavation
BH	backhoe bucket
B	bulldozer blade
R	ripper
E	excavator

support

S shoring N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
V	vane shear (kPa)
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	*plastic limit*
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty Ltd ACN 056 335 516

Excavation No. ***CTP19***

Engineering log - Excavation

Sheet 1 of 1

Office Job No.: ***E12723/4***

Client: ***Department of Commerce*** Date started: ***24.3.2005***

Principal: ***Department of Corrective Services*** Date completed: ***24.3.2005***

Project: ***Environmental/Geotechnical Investigation*** Logged by: ***AG***

Test pit location: ***Long Bay Correctional Facility, Malabar, NSW, Area D.*** Checked by: ***AJB***

equipment type and model: Hyundai 5 1/2 ton excavator Pit Orientation: Easting: m R.L. Surface:

excavation dimensions: 2m long 0.6m wide Northing: m datum: GROUND LEVEL

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	▼	E	0.0			**FILL: SILTY SAND:** Fine to medium grained, dark brown, low liquid limit silt.	M			FILL
				E				**FILL: GRAVELLY SAND:** : Fine to coarse grained, dark grey, fine to medium grained gravel.				
					0.5				W			Abundant building waste materials from approx 0.2m depth: Bricks (<5%), tiles (<5%), PVC pipe (<5%), steel reinforcements (<5%), wire (<5%), sandstone boulders up to 0.2m (<5%).
				E	1.0							REFUSAL ON SANDSTONE
					1.5			Test pit CTP19 terminated at 1.3m				
					2.0							
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method

N	natural exposure
X	existing excavation
BH	backhoe bucket
B	bulldozer blade
R	ripper
E	excavator

support

S shoring N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
V	vane shear (kPa)
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

APPENDIX C1

PID RESULTS

PHASE 1 INVESTIGATION NOVEMBER 2004

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/3

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	**NSW Department Of Commerce**	office:	**Sydney**
principal:		date:	**12/10/2004**
project:	**Detailed Geotechnical Investigation – Site D**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: _____09:00_12/10/2004_____ Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading____0.0_____ppm ☑ Span Calibration (__100_ppm) Actual Reading ____100__ppm

Calibrated by: _____A Delac_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
HA14	0.0-0.1	1	0.0	0.5	0.4	
HA14	0.4-0.5	1	0.0	0.2	0.1	
HA15	0.0-0.1	1	0.0	0.0	0.0	
HA15	0.4-0.5	1	0.0	0.0	0.0	
HA16	0.0-0.1	1	0.0	0.0	0.0	DUP2
HA16	0.4-0.5	1	0.0	0.0	0.0	
HA17	0.0-0.1	1	0.0	0.0	0.0	
HA17	0.4-0.5	1	0.0	0.0	0.0	
HA18	0.0-0.1	1	0.0	0.0	0.0	
HA18	0.2-0.3	1	0.0	0.0	0.0	
HA19	0.0-0.1	1	0.0	0.0	0.0	DUP3
HA19	0.4-0.5	1	0.0	0.0	0.0	
HA20	0.0-0.1	1	0.0	0.0	0.0	
HA21	0.0-0.1	1	0.0	0.0	0.0	DUP4
HA21	0.1-0.3	1	0.0	0.0	0.0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 1 of 1

Coffey

client:	NSW Department of Commerce	office:	Sydney
principal:		date:	25/10/2004
project:	Detailed Geotechnical Investigation Area B	by:	AD
location:	Long Bay Correctional Complex, Malabar, NSW	checked by:	AJB
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: _____09:00am 25/10/2004 _____ Calibration gas: _____100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0_____ppm √ Span Calibration (___100_ppm) Actual Reading____100___ppm

Calibrated by: _____A Delac_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH8	0.0-0.3	1	0.0	0.4	0.2	
CBH8	1.0-1.2	1	0.0	0.0	0.0	
CBH8	2.5-2.7	1	0.0	0.0	0.0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 1 of 4

Coffey

client:	NSW Department of Commerce	office:	Sydney
principal:		date:	25/10/2004
project:	Detailed Geotechnical Investigation Area D	by:	AD
location:	Long Bay Correctional Complex, Malabar, NSW	checked by:	AJB
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 09:00am 25/10/2004 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH9	0.0-0.1	1	0.0	0.4	0.2	
CBH9	1.0-1.2	1	0.0	0.1	0.0	
CBH9	2.5-2.7	1	0.0	0.0	0.0	
CBH9	4.0-4.2	1	0.0	0.0	0.0	
CBH10 MW1	0.0-0.1	1	0.0	0.6	0.4	
CBH10 MW1	1.0-1.2	1	0.0	0.3	0.2	
CBH10 MW1	2.5-2.7	1	0.0	0.0	0.0	
CBH10 MW1	4.0-4.3	1	0.0	0.0	0.0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 2 of 4

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**26/10/2004**
project:	**Detailed Geotechnical Investigation Area D**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 07:00am 26/10/2004

Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm

√ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH11 MW2	0.0-0.1	1	0.0	0.7	0.4	
CBH11 MW2	1.0-1.3	1	0.0	0.3	0.1	
CBH11 MW2	2.5-2.8	1	0.0	0.0	0.0	
CBH11 MW2	4.0-4.3	1	0.0	0.0	0.0	
CBH11 MW2	5.5-5.8	1	0.0	0.0	0.0	
CBH12	0.0-0.1	1	0.0	0.6	0.4	
CBH12	1.0-1.3	1	0.0	0.0	0.0	
CBH12	2.5-2.6	1	0.0	0.0	0.0	
CBH13 MW3	0.0-0.1	1	0.0	0.5	0.1	
CBH13 MW3	1.0-1.3	1	0.0	0.5	0.3	
CBH13 MW3	2.5-2.8	1	0.0	1.2	0.6	
CBH13 MW3	4.0-4.3	1	0.0	0.0	0.0	
CBH13 MW3	5.5-5.8	1	0.0	0.0	0.0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)

HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/3

sheet 3 of 4

form E5.1 - photoionisation detector results

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**27/10/2004**
project:	**Detailed Geotechnical Investigation Area D**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 07:00am 27/10/2004

Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm

√ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH14 MW4	0.0-0.1	1	0.0	0.0	0.0	
CBH14 MW4	1.0-1.3	1	0.0	1.6	3.2	
CBH14 MW4	2.5-2.8	1	0.0	0.0	0.0	
CBH14 MW4	4.0-4.3	1	0.0	0.0	0.0	
CBH15	0.0-0.1	1	0.0	2.1	2.7	
CBH15	1.0-1.3	1	0.0	0.0	0.0	
CBH16	0.0-0.1	1	0.0	0.2	0.0	
CBH16	1.0-1.3	1	0.0	0.1	0.0	
CBH16	2.5-2.8	1	0.0	0.0	0.0	
CBH16	3.8-3.9	1	0.0	0.0	0.0	
CBH17	0.0-0.1	1	0.0	1.1	1.4	
CBH17	1.0-1.3	1	0.0	0.7	1.0	
CBH17	2.5-2.8	1	0.0	0.0	0.0	
CBH17	4.0-4.3	1	0.0	0.0	0.0	
CBH18	0.0-0.1	1	0.0	0.0	0.0	
CBH18	1.0-1.3	1	0.0	0.0	0.0	
CBH18	2.2-2.4	1	0.0	0.6	0.3	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)

HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/3

sheet 4 of 4

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:		date:	27/10/2004
project:	Detailed Geotechnical Investigation Area D	by:	AD
location:	Long Bay Correctional Complex, Malabar, NSW	checked by:	AJB
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 07:00am 27/10/2004

Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm

√ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH19 MW5	0.0-0.1	1	0.0	0.4	0.2	
CBH19 MW5	1.0-1.3	1	0.0	0.0	0.0	
CBH19 MW5	2.5-2.8	1	0.0	0.0	0.0	
CBH19 MW5	4.0-4.3	1	0.0	0.0	0.0	
CBH20	0.0-0.1	1	0.0	0.5	0.3	
CBH20	1.0-1.3	1	0.0	0.0	0.0	
CBH20	2.5-2.8	1	0.0	0.0	0.0	
CBH21	0.0-0.1	1	0.0	0.0	0.0	
CBH21	1.0-1.3	1	0.0	0.0	0.0	
CBH21	2.5-2.8	1	0.0	0.0	0.0	
CBH22	0.0-0.1	1	0.0	1.2	0.9	
CBH22	1.0-1.3	1	0.0	0.8	0.5	
CBH22	2.5-2.8	1	0.0	0.0	0.0	
CBH23	0.0-0.1	1	0.0	1.7	1.3	
CBH23	1.0-1.3	1	0.0	1.1	1.0	
CBH24	0.0-0.1	1	0.0	2.1	1.6	
CBH24	1.0-1.3	1	0.0	0.9	0.3	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 1 of 2

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**28/10/2004**
project:	**Detailed Geotechnical Investigation Area B**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 07:00am 28/10/2004 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH25	0.0-0.1	1	0.0	0.7	0.5	
CBH25	1.0-1.3	1	0.0	0.3	0.1	
CBH25	2.0-2.2	1	0.0	0.0	0.0	
CBH26	0.0-0.1	1	0.0	1.1	1.3	
CBH26	0.9-1.0	1	0.0	0.2	0.9	
CBH28	0.15-0.25	1	0.0	6.5	6.4	Dup 7 (not ALS).
CBH28	1.0-1.2	1	0.0	7.1	7.0	
CBH28	2.5-2.6	1	0.0	4.9	4.8	
CBH28	3.45-3.5	1	0.0	12.4	12.3	
CBH27	0.15-0.25	1	0.0	31.4	31.3	
CBH27	1.0-1.3	1	0.0	35.6	35.3	
CBH27	1.8-1.9	1	0.0	32.6	32.5	
CBH29	0.2-0.3	1	0.0	11.6	11.5	
CBH29	1.0-1.3	1	0.0	20.0	19.9	
CBH30	0.15-0.25	1	0.0	22.5	22.3	
CBH30	1.0-1.3	1	0.0	24.7	24.6	Dup 8 (ALS).

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 2 of 2

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**28/10/2004**
project:	**Detailed Geotechnical Investigation Area B**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 12:45pm 28/10/2004 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH30	1.9-2.0	1	0.0	30.9	28	
CBH31	0.2-0.3	1	0.0	31.8	27.3	
CBH31	0.9-1.0	1	0.0	21.9	23.4	
CBH32	0.0-0.1	1	0.0	6.8	6.7	
CBH32	1.0-1.2	1	0.0	4.5	4.4	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**1/11/2004**
project:	**Detailed Geotechnical Investigation Area B**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 07:00am 1/11/2004 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH58	0.2-0.3	1	0.0	16.7	11.4	
CBH61	0.0-0.1	1	0.0	17.4	12.3	
CBH61	0.8-0.9	1	0.0	6.0	4.2	
CBH62	0.2-0.3	1	0.0	12.9	8.8	
CBH62	0.3-0.5	1	0.0	0.0	0.0	Also Dup 13 ALS.
CBH64	0.2-0.4	1	0.0	7.3	2.7	
CBH71	0.0-0.6	1	0.0	0.0	0.0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/3

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:		date:	**1/11/2004**
project:	**Detailed Geotechnical Investigation Area D**	by:	**AD**
location:	**Long Bay Correctional Complex, Malabar, NSW**	checked by:	**AJB**
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 07:00am 1/11/2004 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: A Delac

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH65	0.0-0.1	1	0.0	3.9	2.7	
CBH65	1.0-1.3	1	0.0	6.1	4.8	
CBH65	2.4-2.5	1	0.0	2.5	1.4	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

APPENDIX C2

PID RESULTS

PHASE 1 INVESTIGATION MARCH 2005

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**10/3/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**SD**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN:110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: _____9/3/05_____ Calibration gas: ___98___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___98_ppm) Actual Reading_____98__ppm

Calibrated by: _____ENVIROEQUIP_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH87	0-0.3	1	0.0	460	400	
CBH87	0.5-0.7	1	0.5	6.8	2.1	
CBH88	0.0-0.3	1	0.0	11.0	2.9	
CBH88	0.3-0.5	1	0.5	3.9	1.2	
CBH88	0.5-0.8	1	0.0	9.1	7.0	
CBH88	1.5-1.7	1	0.0	11.0	8.0	When stirred up the readings peak at 17.0
CBH89	0.0-0.3	1	0.0	11.0	5.5	
CBH89	0.5-1.0	1	0.0	5.5	4.0	
CBH89	1.5-1.7	1	0.0	0.0	0.0	
CBH91	0.0-0.1	1	0.0	13.9	13.9	
CBH94	0.2-0.3	3	0.0	96.0	85.0	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**11/3/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**SD**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 11/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: SD

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH122	0.2-0.3	2	0.0	0.0	0.0	
CBH122	0.5-0.7	2	0.0	0.0	0.0	
CBH123	0.2-0.3	1	0.0	0.0	0.0	
CBH123	0.5-0.7	1	0.0	0.0	0.0	
CBH123	1.5-1.7	1	0.0	3.6	1.0	
CBH123	2.0-2.2	2	0.0	0.0	0.0	
CBH76	0.2-0.3	1	0.0	0.0	0.0	
CBH76	0.7-0.85	1	0.0	0.0	0.0	
CBH75	0.2-0.3	3	0.0	745	745	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**15/3/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-008544)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 15/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: AG

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
HA24	0.15-0.25	1	0.1	0.6	0.5	
HA24	0.6-0.7	1	0.1	1.8	1.7	
HA22	0.15-0.2	1	0.5	0.8	0.7	
HA22	0.5-0.6	1	0	0.5	0.3	
HA25	0.0-0.1	1	0.2	0.3	0.2	
HA25	0.4-0.5	1	0.2	0.4	0.3	
HA26	0.0-0.1	1	0.2	0.3	0.2	
HA26	0.4-0.5	1	0.2	0.6	0.5	
HA27	0.0-0.1	1	0.3	0.4	0.3	
HA27	0.7-0.8	1	0.3	0.4	0.3	
CBH72/MW6	0.2-0.3	1	0	0.1	0	
CBH72/MW6	0.5-0.7	1	0	0	0	
CBH73/MW8	0.1-0.3	1	0	0	0	
CBH74/MW9	0.15-0.25	1	0	0.2	0	
CBH74/MW9	0.5-0.7	1	0	0	0	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 2

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	16/3/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	AG
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-008544)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 16/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: AG

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH77	0.1-0.2	1	0	0.8	0.7	
CBH77	0.5-0.6	1	0	0.8	0.7	
CBH77	1.0-1.2	1	0	0.2	0.1	
CBH79	0.2-0.3	1	0	0.2	0.1	
CBH79	0.5-0.95	1	0	1.7	1.5	
CBH80	0.2-0.3	1	0	2.3	2.2	
CBH80	0.5-0.95	1	0	0.6	0.5	
CBH80	1.1-1.3	1	0	1.0	0.8	
CBH82	0.2-0.3	1	0	1.2	1.0	
CBH82	0.5-0.95	1	0	1.8	1.7	
CBH83	0.2-0.3	1	0	0.8	0.6	
CBH83	0.5-0.95	1	0	2.0	1.7	
CBH83	1.1-1.45	1	0	7.0	0.5	
CBH84	0.2-0.3	1	0	0.5	0.3	
CBH84	0.4-0.5	1	0	0.9	0.7	
CBH85	0.15-0.25	1	0	0.3	0.1	
CBH85	0.5-0.6	1	0	0.3	0.1	continued

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 2 of 2

Coffey

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	16/3/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	AG
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 16/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: AG

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH85	1.1-1.45	1	0	7.0	0.5	From page 1
CBH86	0.2-0.3	1	0	0.1	0.0	
CBH86	0.5-0.95	1	0	0.0	0.0	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Corrective Services**	date:	**17/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-008544)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 17/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: AG

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH90	0.0-0.2	1	0	0	0	
CBH90	0.5-0.95	1	0	0.7	0.4	
CBH90	1.3-1.5	1	0	0.3	0.2	
CBH92	0.0-0.1	1	0	0	0	
CBH92	0.15-0.25	1	0	0	0	
CBH93	0.0-0.05	1	0	0.1	0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**17 March 2005**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**JRD**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-008544)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: _____3pm _17 March 2005_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
HA28	0.0-0.1	1	0.0	0.0	0.0	
HA28	0.8-0.9	1	0.0	0.0	0.0	
HA29	0.15-0.2	1	0.0	0.2	0.1	
HA29	0.6-0.7	1	0.0	0.3	0.2	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 2

form E5.1 - photoionisation detector results

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Corrective Services**	date:	**10/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**CFW**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 09/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: ENVIROEQUIP

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH97	0.0-0.2	1	0.0	0.6	0.3	
CBH97	0.5-0.95	2	0.0	0.8	0.7	
CBH97	1.5-1.95	1	0.0	0.8	0.7	
CBH110	0.0-2	1	0.0	1.1	0.8	
CBH110	0.5-0.95	1	0.0	1.1	0.9	
CBH110	2.5-2.95	1	0.0	1.7	1.5	
CBH111	0.0-0.2	1	0.0	1.2	1.1	
CBH111	1.5-1.9	1	0.5	1.1	1.0	
CBH111	2.5-2.95	1	0.5	1.6	1.6	
CBH112	0.0-0.2	1	0.0	0.1	0.0	
CBH112	0.5-0.95	1	0.0	0.1	0.0	
CBH112	1.5-1.95	1	0.0	0.8	0.7	
CBH 116	0.0-0.2	1	0.0	0.8	0.7	
CBH116	0.5-0.7	1	0.0	1.1	0.7	
CBH116	1.5-1.8	1	0.0	1.6	1.3	
CBH116	2.5-2.95	1	0.0	0.0	0.0	
CBH119	0.0-0.2	1	0.0	0.1	0.0	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 2 of 2

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Corrective Services	date:	10/03/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	CFW
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-004086)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 09/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: ENVIROEQUIP

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH119	0.5-0.95	1	0.0	0.0	0.0	
CBH119	1.5-1.95	1	0.0	0.1	0.0	
CBH119	2.5-2.95	1	0.0	0.9	0.8	
CBH119	3.5-3.95	1	0.0	2.1	1.9	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 2

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Corrective Services**	date:	**11/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**CW**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 11/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: CW

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH95	0.7-1.15	1	0.0	68	68	
CBH95	2.5-2.95	1	0.0	>9999	>9999	
CBH95	3.5-3.95	1	0.0	15.4	13	
CBH96	0.05-0.2	1	5.6	>9999	>9999	
CBH96	0.5-0.95	1	9.2	151	15.1	
CBH96	3.5-3.95	1	14.6	20.2	19.9	
CBH110	0.0-0.2	1	17	30.3	30.0	
CBH110	0.5-0.95	1	40	>4000	>4000	
CBH110	2.0-2.95	1	25	52	42	
CBH111	1.0-1.45	1	23	274	27	
CBH111	2.5-3.3	1	24.3	27.3	26.6	
CBH111	4-4.45	1	26.0	32.6	32	
CBH113	0.0-0.2	1	26.2	20.7	20.7	
CBH113	2.0-2.9	1	26.0	32.4	32	
CBH114	0.0-0.2	1	30.1	40.1	38.1	
CBH114	0.5-0.95	1	32	34.2	33.7	
CBH111	0.0-0.2	1	29.9	33.2	31.9	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 2 of 2

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Corrective Services	date:	11/3/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	CW
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 11/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: CW

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH115	0.0-0.2	1	31	36.1	35.1	
CBH115	1.0-1.95	1	29.7	34.9	34.3	
CBH115	2.2-3.1	1	24	29.2	27.4	
CBH115	4.0-4.95	1	24	33.8	32.9	
CBH117	0.0-0.2	1	30.8	32.8	32.0	
CBH117	0.5-0.95	1	31.5	35.0	34.2	
CBH117	1.5-1.95	1	26	29.8	28.2	
CBH117	2.5-2.95	1	32.8	34.6	34.4	
CBH118	0.5-0.8	1	30.8	36.8	35.1	
CBH118	1.5-1.95	1	30.0	32.1	31.1	
CBH118	2.3-2.95	1	36.4	80.2	80.2	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**14/3/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**CFW**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-0040862708)***	lamp voltage:	***10.6Ev***

PID Calibration Record

Date / Time of Calibration: _____14/3/05____9AM_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100__ppm) Actual Reading_____102__ppm

Calibrated by: _____CFW_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH129	0.5-0.9	1	0.2	0.6	0.5	
CBH130	0.5-0.9	1	0.2	0.5	0.3	
CBH131	0.1-0.3	1	0.2	2.0	1.7	
CBH131	0.4-0.6	1	0.3	1.4	1.2	
CBH131	1.5-1.9	1	0.3	1.4	1.2	
CBH132	0.5-0.95	1	0.2	0.6	0.3	
CBH132	1.5-1.95	1	0.2	0.7	0.4	
CBH132	2.0-2.45	1	0.2	0.4	0.3	
CBH133	0.0-0.2	1	0.2	1.4	1.0	
CBH133	0.5-0.7	1	0.2	1.4	1.3	
CBH133	1.5-1.8	1	0.2	1.3	1.2	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (x) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	15/03/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	CFW
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-004086)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: _____15/03/2005_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____CFW_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH128	2.2-2.65	1	0.0	54.9	53.2	Unsuitable high readings.
CBH136	0.0-0.2	1	0.0	19.9	12.3	
CBH136	1.0-1.4	2	1.2	6.1	2.4	
CBH134	0.0-0.2	2	0.0	7.4	6.6	
CBH134	2.1-2.35	2	0.0	80.2	71.9	
CBH134	3.2-3.5	2	0.0	45.3	42.2	
CBH135	0.0-0.2	2	0.0	64.8	64.8	
CBH135	0.5-0.7	2	0.0	42.8	62.1	
CBH137	0.0-0.2	2	0.0	40.2	38.6	
CBH137	1.0-1.4	2	0.0	78.3	75.5	
CBH138	1.2-1.9	2	0.0	51.5	51.0	
CBH138	2-2.7	2	0.0	39.7	33.2	
CBH139	0.0-0.2	2	0.0	40.8	39.4	
CBH139	1.7-1.9	2	0.0	36.2	30.7	
CBH139	2.0-2.5-	2	0.0	50.7	48.8	
CBH138	0.0-0.2	2	0.0	32.4	30.8	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**16/3/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**CFW**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record8

Date / Time of Calibration: 16/3/05 9am_____16/03/2005_____ Calibration gas: ___100__ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___98_ppm) Actual Reading_____100__ppm

Calibrated by: _____CFW_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH100	0.0-0.2	1	0.0	8.3	8.3	Still increasing
CBH100	1.0-1.4	1	0.0	43.6	43.6	Still increasing
CBH98	0.0-0.2	1	0.0	6.1	6.1	Still increasing
CBH98	1.1-1.5	1	0.0	5.7	5.5	Still increasing
CBH98	2.0-2.95	1	0.0	5.9	5.9	Still increasing
CBH98	2.8-3.25	1	0.0	7.4	7.4	Still increasing
CBH99	0.0-0.2	1	0.0	15.9	15.9	Still increasing
CBH99	1.4-1.75	1	0.0	20.2	20.2	Still increasing
CBH99	2.5-2.8	1	0.0	25.3	25.3	Still increasing
CBH99	4.55-4.7	1	0.0	9.0	9.0	Still increasing
CBH100	1.5-1.95	1	0.0	7.2	7.2	Still increasing
CBH100	3.0-3.45	1	0.0	17.6	17.6	Still increasing

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 1

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**17/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN:110-008544)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 17/03/2005 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: AG

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH140	0.0-0.2	1	0	0.3	0.4	
CBH140	0.5-0.95	1	0	0	0	
CBH140,	1.4-1.5	1	0	0	0	
CBH141	0.0-0.2	1	0	0	0	
CBH141	0.5-0.95	1	0	0	0	
CBH141	1.3-1.75	1	0	0	0	
CBH142	0.0-0.2	1	0	0	0	
CBH142	0.5-0.7	1	0	0	0	
CBH143	0.0-0.2	1	0	0	0	
CBH143	0.5-0.6	1	0	0	0	
CBH143	1.7-2.15	1	0	0	0	
CBH144	0.0-0.2	1	0	0	0	
CBH144	0.5-0.6	1	0	0	0	
CBH144	1.5-1.95	1	0	0	0	

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	18/03/05
project:	Phase 2 - Stage 2 ESA for Areas B and D	by:	CFW
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-004086)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: 18/03/05 Calibration gas: 100 ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading 0.0 ppm √ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: CFW

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH101	0.0-0.2	1	0.0	1.9	1.6	
CBH101	1.0-1.95	1	0.0	0.5	0.3	
CBH101	1.5-1.95	1	0.0	1.6	1.3	
CBH103	0.0-0.2	1	0.0	0.3	0.0	
CBH103	1.1-1.95	1	0.0	1.5	1.2	
CBH103	2.2-2.95	1	0.0	0.5	0.3	
CBH105	0.0-0.2	1	0.0	0.3	0.1	
CBH105	1.2-1.65	1	0.0	2.3	2.1	
CBH105	2.4-2.85	1	0.0	1.0	0.8	
CBH105	4.0-4.45	1	0.0	2.2	1.6	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**21/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**CFW**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 110-004086)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: _____21/03/05_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (__100__ppm) Actual Reading____100____ppm

Calibrated by: _____ CFW _____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CBH102	0.0-0.2	1	0.0	1.2	1.0	
CBH102	1.0-1.2	1	0.0	1.3	1.1	
CBH102	2.2-2.45.	1	0.0	1.4	1.2	
CBH104	0.0-0.2	1	0.0	1.6	1.5	
CBH104	1.4-1.65	1	0.0	2.1	1.4	
CBH106	0.0-0.2	1	0.0	1.5	1.4	
CBH106	0.5-0.7	1	0.0	1.6	1.5	
CBH106	1.0-1.45	1	0.0	0.8	0.7	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

job no: E12723/4

sheet 1 of 1

form E5.1 - photoionisation detector results

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	22/03/05
project:	Phase 2 - Stage 2 ESA for Area D	by:	AG
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 110-002708)*	lamp voltage:	*10.6eV*

PID Calibration Record

Date / Time of Calibration: _____22/03/2005_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CTP1	0.0-0.2	1	0	1.6	1.4	
CTP1	1.0-1.2	1	0	1.6	1.5	
CTP1	1.9-2.2	1	0.2	2.0	1.9	
CTP2	0.0-0.2	1	0	1.1	0.9	
CTP2	1.0-1.2	1	0.2	1.4	1.3	
CTP2	2.0-2.2	1	0.2	1.2	0.9	
CTP2	3.0-3.2	1	0.2	1.7	1.5	
CTP3	0.0-0.2	1	0.2	0.9	0.8	
CTP3	1.0-1.2	1	0.2	1.4	1.2	
CTP3	2.0-2.2	1	0.1	2.9	2.8	
CTP4	0.0-0.2	1	0.1	1.7	1.5	
CTP4	1.0-1.2	1	0.2	3.6	3.0	
CTP4	2.0-2.2	1	0.2	5.2	5.0	
CTP5	0.0-0.2	1	0	1.9	1.8	
CTP5	1.0-1.2	1	0	2.2	2.1	
CTP5	2.0-2.2	1	0	3.7	3.6	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 2

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Corrections**	date:	**23/03/05**
project:	**Phase 2 - Stage 2 ESA for Area D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	
PID serial number:	***MINIRAE 2000 (SN: 110-008544)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: _____23/03/05_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CTP6	0.0-0.2	1	0	0	0	
CTP6	0.5-0.6	1	0	0	0	
CTP7	0.0-0.2	1	0	0	0	
CTP7	0.5-0.6	1	0	0	0	
CTP8	0.0-0.2	1	0	2.4	2.3	
CTP8	0.8-1.0	1	0	2.2	2.1	
CTP10	0.0-0.2	1	0	1.5	1.4	
CTP10	0.5-0.5	1	0	2.8	2.7	
CTP10	1.2-1.4	1	0	2.0	1.8	
CTP10	2.0-2.2	1	0	1.8	1.6	
CTP11	0.0-0.2	1	0	0	0	
CTP11	0.3-0.4	1	0	1.3	1.2	
CTP11	0.4-0.6	1	0	0.6	0.5	
CTP11	2.0-2.2	1	0	0	0	
CTP11	2.5-2.7	1	0	1.6	1.5	
CTP12	0.0-0.2	1	0.2	1.1	0.9	
CTP12	1.0-1.2	1	0	1.2	1.1	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 2 of 2

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**23/03/05**
project:	**Phase 2 - Stage 2 ESA for Areas B and D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**

PID serial number: ***MINIRAE 2000 (SN: 110-008544)*** lamp voltage: ***10.6Ev***

PID Calibration Record

Date / Time of Calibration: _____23/03/05_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CTP12	2.3-2.6	1	0	2.0	1.9	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 1 of 2

Coffey

client:	**NSW Department of Commerce**	office:	**Sydney**
principal:	**NSW Department of Correctional Services**	date:	**24/3/05**
project:	**Phase 2 - Stage 2 ESA for Area D**	by:	**AG**
location:	**Long Bay Gaol, Long Bay**	checked by:	**SD**
PID serial number:	***MINIRAE 2000 (SN: 005G14)***	lamp voltage:	***10.6Ev***

PID Calibration Record

Date / Time of Calibration: _____24/03/05_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CTP13	0.0-0.2	1	0	2.3	2.0	
CTP13	0.4-0.6	1	0	4.1	4.0	
CTP13	0.7-0.9	1	0.2	6.1	6.0	
CTP14	0.0-0.2	1	0	3.5	3.3	
CTP14	1.0-1.2	1	0.1	1.3	1.2	
CTP14	1.3-1.4	1	0	1.9	1.8	
CTP14	2.0-2.2	1	0	0.6	0.4	
CTP15	0.0-0.2	1	0	0	0	
CTP15	1.0-1.2	1	0	0	0	
CTP15	1.4-1.6	1	0	0	0	
CTP15	1.6-1.8	1	0	0	0	
CTP15	1.8-2.2	1	0	0	0	
CTP16	0.0-0.2	1	0	1.9	1.7	
CTP16	1.0-1.2	1	0	1.9	1.7	
CTP16	1.3-1.7	1	0	1.5	1.3	
CTP17	0.0-0.2	1	0	0	0	
CTP17	1.0-1.2	1	0	1.5	1.3	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E5.1 - photoionisation detector results

job no: E12723/4

sheet 2 of 2

Coffey

client:	NSW Department of Commerce	office:	Sydney
principal:	NSW Department of Correctional Services	date:	24/03/05
project:	Phase 2 - Stage 2 ESA for Area D	by:	AG
location:	Long Bay Gaol, Long Bay	checked by:	SD
PID serial number:	*MINIRAE 2000 (SN: 005G14)*	lamp voltage:	*10.6Ev*

PID Calibration Record

Date / Time of Calibration: _____24/03/05_____ Calibration gas: ___100___ ppm ISOBUTYLENE

√ Zero Calibration (0.0ppm) Actual Reading_____0.0____ppm √ Span Calibration (___100_ppm) Actual Reading_____100__ppm

Calibrated by: _____AG_____

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
CTP17	2.0-2.2	1	0	0.6	0.5	
CTP17	3.0-3.2	1	0	0.7	0.6	
CTP17	3.8-4.0	1	0	0.6	0.5	
CTP18	0.0-0.2	1	0	0	0	
CTP18	0.3-0.4	1	0	0	0	
CTP18	1.0-1.2	1	0	0	0	
CTP19	0.0-0.2	1	0	0	0	
CTP19	0.2-0.4	1	0	0	0	
CTP19	1.0-1.3	1	0	0	0	

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS (X) = headspace sample (with soil type-unified classification system in parentheses)

APPENDIX D1

GROUNDWATER AND METHANE MONITORING RECORD SHEETS

PHASE 1 INVESTIGATION NOVEMBER 2004

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E7.1 – Environmental Monitoring Well
Record of Field Measurements

WELL ID: MW1

sheet 1 of 1

Job Number: E12723/3

Client:	**NSW Department of Commerce**	Office:	**Sydney**
Principal:		Date:	**5/11/2004**
Project:	**Long Bay Correctional Complex**	By:	**AD/AJB**
Location:	**Long Bay, Area D Groundwater**	Checked	**AJB**

SAMPLED? **X** SAMPLE ID: **MW1** WATER QUALITY METER: TPS: 90 FLMV

DUPLICATE? DUPLICATE ID: DIP METER: **SOLINST 122**

Time	Water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	Temp (°C)	DO (ppm)	Volume (litre)	Odour/Colour/ Clarity	Comments (PSP depth, algae, etc.)
08:30	2.13	1187	6.50	133	19.5	6.04	1L	CL-B (DK).	Total depth 4.5m.
		1186	6.72	101	19.0	2.32	2L	CL-B (DK).	
		1172	6.71	91	18.9	1.87	3L	CL-B (DK).	
		1163	6.70	86	18.9	1.51	4L	CL-B (DK).	
		1156	6.69	80	18.8	1.36	5L	CL-B (DK).	
		1138	6.65	70	18.9	1.17	6L	CL-B (DK).	
	2.08	1136	6.64	67	18.9	0.83	7L	CL-B (DK).	
		1131	6.63	62	19.1	0.78	8L	CL-B (DK).	

Colour:
Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey (**G**), Black (**Bk**). The preceding colours may also be described as "Light" (**Lt**) or "Dark" (**Dk**) eg. Light Grey (**Lt-G**).

Clarity:
Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E7.1 – Environmental Monitoring Well
Record of Field Measurements

WELL ID: MW2+DUP1

sheet 1 of 1

Job Number: E12723/3

Client:	**NSW Department of Commerce**	Office:	**Sydney**
Principal:		Date:	**5/11/2004**
Project:	**Long Bay Correctional Complex**	By:	**AD/AJB**
Location:	**Long Bay, Area D Groundwater**	Checked	**AJB**

SAMPLED? **X** SAMPLE ID: **MW2** WATER QUALITY METER: TPS: 90 FLMV

DUPLICATE? **X** DUPLICATE ID: **DUP1** DIP METER: **SOLINST 122**

Time	Water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	Temp (°C)	DO (ppm)	Volume (litre)	Odour/Colour/ Clarity	Comments (PSP depth, algae, etc.)
07:30	3.54	370	5.89	207	19.5	4.38	1.0L	No odour. CL-B.	Total depth 5.32m.
		356	6.01	205	19.0	4.64	2L	No odour. CL-B.	
		350	6.07	201	19.1	4.65	3L	No odour. CL-B.	
		349	6.11	197	19.3	4.69	4L	SC-B. No odour.	
		345	6.15	192	19.3	4.84	5L	SC-B. No odour.	
		345	6.18	190	19.3	4.79	6L	SC-B. No odour.	
	3.53	344	6.19	189	19.3	4.85	7L	SC-B. No odour.	
		343	6.20	186	19.3	4.93	8L	SC-B. No odour.	

Colour:
Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey (**G**), Black (**Bk**). The preceding colours may also be described as "Light" (**Lt**) or "Dark" (**Dk**) eg. Light Grey (**Lt-G**).

Clarity:
Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E7.1 – Environmental Monitoring Well
Record of Field Measurements

WELL ID: MW3

sheet 1 of 1

Job Number: E12723/3

Client:	**NSW Department of Commerce**	Office:	**Sydney**
Principal:		Date:	**5/11/2004**
Project:	**Long Bay Correctional Complex**	By:	**AD**
Location:	**Long Bay, Area D Groundwater**	Checked	**AJB**

SAMPLED? **X** SAMPLE ID: **MW3** WATER QUALITY METER: TPS: 90 FLMV

DUPLICATE? DUPLICATE ID: DIP METER: **SOLINST 122**

Time	Water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	Temp (°C)	DO (ppm)	Volume (litre)	Odour/Colour/ Clarity	Comments (PSP depth, algae, etc.)
09:30	2.80	408	5.41	102	19.4	3.49	1L	Lt B-CL. No odour.	Total depth 5.5m.
		390	5.62	112	19.3	2.84	2L		
		389	5.60	111	19.3	2.76	3L		
	3.30	383	5.61	110	19.3	2.66	4L		
		381	5.60	110	19.2	2.62	5L		
	3.91	380	5.62	109	19.2	2.87	6L		
		296	5.60	110	19.2	2.81	7L		
	4.85	291	5.61	110	19.1	2.78	8L		

Colour:
Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey (**G**), Black (**Bk**). The preceding colours may also be described as "Light" (**Lt**) or "Dark" (**Dk**) eg. Light Grey (**Lt-G**).

Clarity:
Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E7.1 – Environmental Monitoring Well
Record of Field Measurements

WELL ID: MW4

sheet 1 of 1

Job Number: E12723/3

Client:	**NSW Department of Commerce**	Office:	**Sydney**
Principal:		Date:	**5/11/2004**
Project:	**Long Bay Correctional Complex**	By:	**AD**
Location:	**Long Bay, Area D Groundwater**	Checked	**AJB**

SAMPLED? **X** SAMPLE ID: **MW4** WATER QUALITY METER: TPS: 90 FLMV

DUPLICATE? DUPLICATE ID: DIP METER: **SOLINST 122**

Time	Water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	Temp (°C)	DO (ppm)	Volume (litre)	Odour/Colour/ Clarity	Comments (PSP depth, algae, etc.)
10:00	1.15	563	6.44	-66	18.9	0.14	1L	Odour. DK B. CL.	Total depth 4.32m.
		562	6.46	-79	18.7	0.09	2L	Odour. DK B. CL.	
		565	6.47	-93	18.7	0.07	3L	Odour. DK B. CL.	
		566	6.48	-101	18.7	0.06	4L	Odour. DK B. CL.	
		565	6.48	-109	18.7	0.04	5L	Odour. DK B. CL.	
		565	6.49	-113	18.6	0.03	6L	Odour. DK B. CL.	
		566	6.48	-125	18.6	0.03	7L	Odour. DK B. CL.	
		565	6.48	-129	18.6	0.02	8L	Odour. DK B. CL.	
	1.25	565	6.49	-131	18.9	0.02	9L	Odour. DK B. CL.	

Colour:
Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey (**G**), Black (**Bk**). The preceding colours may also be described as "Light" (**Lt**) or "Dark" (**Dk**) eg. Light Grey (**Lt-G**).

Clarity:
Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 003 335 516

form E7.1 – Environmental Monitoring Well
Record of Field Measurements

WELL ID: MW5

sheet 1 of 1

Job Number: E12723/3

Client:	**NSW Department of Commerce**	Office:	**Sydney**
Principal:		Date:	**5/11/2004**
Project:	**Long Bay Correctional Complex**	By:	**AD**
Location:	**Long Bay, Area D Groundwater**	Checked	**AJB**

SAMPLED? **X** SAMPLE ID: **MW5** WATER QUALITY METER: TPS: 90 FLMV

DUPLICATE? DUPLICATE ID: DIP METER: **SOLINST 122**

Time	Water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	Temp (°C)	DO (ppm)	Volume (litre)	Odour/Colour/ Clarity	Comments (PSP depth, algae, etc.)
11:00	2.95	766	6.33	31	20.0	0.66	1L	Light odour. DB. CL.	Total depth 5.45m.
		761	6.36	30	20.0	0.76	2L	Light odour. DB. CL.	
		746	6.39	29	19.9	1.05	3L	Light odour. DB. CL.	
		748	6.39	30	19.9	1.28	4L	Light odour. DB. CL.	
		740	6.40	29	19.9	1.47	5L	Light odour. DB. CL.	
		740	6.41	28	19.9	1.48	6L	Light odour. DB. CL.	
		736	6.41	29	19.9	1.29	7L	Light odour. DB. CL.	
		733	6.41	30	19.9	1.31	8L	Light odour. DB. CL.	
	2.45	733	6.41	30	19.9	1.27	9L	Light odour. DB. CL.	

Colour:
Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey (**G**), Black (**Bk**). The preceding colours may also be described as "Light" (**Lt**) or "Dark" (**Dk**) eg. Light Grey (**Lt-G**).

Clarity:
Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

APPENDIX D2

GROUNDWATER AND METHANE MONITORING RECORD SHEETS

PHASE 1 INVESTIGATION MARCH 2005

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW1*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW1 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1300	2.620	3.87	5.81		16.6		1	B - CL	SLIGHT SHEEN AND ODOUR
		5.55	5.78		17.6		2	B – CL	
		7.04	5.77		18.0		3	B – CL	
		17.44	5.78		19.2		4	B – CL	
		24.3	5.76		19.7		5	B – CL	
		69.0	5.76		20.2		6	B – CL	
		160.5	5.76		20.4		7	B – CL	
		203.9	5.76		20.7		8	B – CL	
		219.6	5.76		20.7		9	B - CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~3.7L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 4.460m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW1*

sheet 2 of 2

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW1 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		247.6	5.79		20.7		10	B – CL	
		290.0	5.81		20.8		11	B – CL	
		332	5.81		20.9		12	B – CL	
		447	5.80		20.9		13	B – CL	
		471	5.79		20.9		14	B – CL	
1320	3.520	482	5.79		20.9		15	B – CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW2*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW2 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1155	*3.835*	*556*	*6.34*		*19.2*		*1*	*B - CL*	
		500	6.33		20.3		2	B – CL	
		521	6.31		20.6		3	B – CL	
		519	6.29		20.8		4	B – SC	
		512	6.27		21.1		5	B – SC	
		508	6.26		21.3		6	B – SC	
		499	6.22		21.5		7	B – SC	
		497	6.22		21.5		8	B – SC	
		495	6.20		21.5		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~3L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.375m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW2*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW2 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
1220	3.840	493	6.19		21.6		10	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW3*

sheet *1* of *1*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW3 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
1400	3.285	301	6.91		19.8		1	B - CL	
		281	6.13		20.5		2	B – CL	
		280	5.72		20.8		3	B – CL	
		282	5.76		20.9		4	B – CL	
		280	5.76		20.9		5	B – CL	
		276	6.04		20.7		6	B – CL	
		274	4.94		20.4		7	B – CL	
1430	5.50	271	6.32		20.4		8	B – CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4.5L in Well, <2 Well volumes removed before well pumped dry, sampled next day

Total Depth of Well: 5.50m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW4*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW4 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
0900	1.400	847	5.99		19.0		1	B - CL	SLIGHT SHEEN AND ODOUR
		877	6.03		19.0		2	B – CL	
		889	6.09		19.1		3	B – CL	
		887	6.12		19.3		4	B – CL	
		893	6.20		19.9		5	B – CL	
		890	6.23		20.3		6	B – CL	
		884	6.25		20.5		7	B – CL	
		887	6.27		20.7		8	B – CL	
		885	6.27		20.7		9	B - CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~6L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 4.315m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW4*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW4 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		884	6.29		20.7		10	B – CL	
		737	6.32		21.2		11	B – CL	
		732	6.32		21.6		12	B – CL	
		730	6.33		21.7		13	B – CL	
		726	6.33		21.7		14	B – CL	
		725	6.33		21.8		15	B – CL	
		729	6.34		21.8		16	B – CL	
		724	6.34		21.8		17	B – CL	
0920	1.585	719	6.34		21.8		18	B - CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW5*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW5 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP1 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
1020	3.195	733	4.99		21.6		1	B - CL	
		667	5.31		22.2		2	B – CL	
		661	5.42		22.2		3	B – CL	
		659	5.55		22.2		4	B – SC	
		658	5.60		22.3		5	B – SC	
		657	5.66		22.4		6	B – SC	
		655	5.68		22.4		7	B – SC	
		655	5.70		22.4		8	B – SC	
		655	5.73		22.5		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.10m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW5*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW5 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP1 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		655	5.76		22.5		10	B – SC	
		654	5.74		22.5		11	B – SC	
1040	3.190	656	5.75		22.5		12	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW6*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☐ SAMPLE ID: MW6 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
1100	2.19	506	7.07		22.2		1	TR	SLIGHT SHEEN AND ODOUR
		524	6.58		22.9		2	TR	
		519	5.83		23.5		3	TR	
		513	5.49		23.7		4	TR	
		506	5.30		24.0		5	TR	
		450	5.60		24.3		6	TR	
		446	5.67		24.3		7	TR	
		441	5.68		24.3		8	TR	
		409	5.52		24.4		9	TR	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~7.5L in Well, well bailed dry with negligible recharge and as such was not sampled.

Total Depth of Well: 5.930m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW6*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☐ SAMPLE ID: MW6 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		423	5.22		24.4		10	TR	
		436	5.12		24.4		11	TR	
		449	4.98		24.3		12	TR	
		466	4.85		24.3		13	TR	
		474	4.75		24.1		14	TR	
		493	4.64		24.0		15	TR	
		498	4.59		23.9		16	TR	
		508	4.64		23.7		17	TR	
1140	5.890	511	4.78		23.6		18	TR	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW7*

sheet *1* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW7 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP2 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1200	1.00	1057	5.25		22.7		1	TR	SLIGHT SHEEN ON WATER
		1174	5.18		23.4		2	B – SC	
		1169	4.97		23.9		3	B – SC	
		1172	4.82		24.1		4	B – SC	
		1129	4.83		24.6		5	B – SC	
		1091	4.99		24.9		6	B – SC	
		1057	5.14		25.2		7	B – SC	
		1003	5.24		25.3		8	B – SC	
		944	5.31		25.3		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~10L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.93m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW7*

sheet 2 of 4

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW7 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP2 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		753	5.48		25.3		10	B – SC	
		854	5.43		25.3		11	B – SC	
		910	5.35		25.3		12	B – SC	
		959	5.22		25.2		13	B – SC	
		992	5.09		25.1		14	B – SC	
		1033	4.95		25.0		15	B – SC	
		1057	4.88		25.0		16	B – SC	
		1108	4.77		24.9		17	B – SC	
		1135	4.71		24.8		18	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW7*

sheet *3* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW7 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP2 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		1153	4.63		24.6		19	B – SC	
		1163	4.55		24.5		20	B – SC	
		1177	4.53		24.4		21	B – SC	
		1188	4.52		24.3		22	B – SC	
		1192	4.53		24.3		23	B – SC	
		1174	4.53		24.2		24	B – SC	
		1182	4.53		24.2		25	B – SC	
		1186	4.53		24.2		26	B – SC	
		1179	4.52		24.1		27	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW7*

sheet *4* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW7 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☒ DUPLICATE ID: DUP2 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		1170	4.52		24.1		28	B – SC	
		1176	4.52		24.1		29	B – SC	
1240	5.910	1189	4.52		24.1		30	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW8*

sheet *1* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW8 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1300	1.10	695	4.56		23.6		1	TR	SLIGHT SHEEN ON WATER
		692	4.56		23.6		2	B – SC	
		679	4.48		23.9		3	B – SC	
		670	4.40		24.2		4	B – SC	
		678	4.21		24.4		5	B – SC	
		684	4.14		24.6		6	B – SC	
		679	4.08		24.6		7	B – SC	
		716	4.66		24.4		8	B – SC	
		681	4.47		24.5		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~9.5L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.870m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW8*

sheet *2* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW8 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		697	4.02		24.6		10	B – SC	
		698	3.99		24.6		11	B – SC	
		708	4.42		24.6		12	B – SC	
		707	4.27		24.6		13	B – SC	
		705	4.19		24.6		14	B – SC	
		710	4.52		24.6		15	B – SC	
		705	3.92		24.6		16	B – SC	
		715	3.95		24.6		17	B – SC	
		712	3.95		24.6		18	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW8*

sheet *3* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW8 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		716	3.94		24.6		19	B – SC	
		714	3.94		24.6		20	B – SC	
		724	3.92		24.6		21	B – SC	
		719	4.34		24.6		22	B – SC	
		720	4.63		24.5		23	B – SC	
		716	4.74		24.5		24	B – SC	
		721	4.74		24.6		25	B – SC	
		726	4.77		24.3		26	B – SC	
		726	4.78		24.3		27	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW8*

sheet *4* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW8 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		727	4.78		24.3		28	B – SC	
1340	3.980	725	4.78		24.3		29	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW9*

sheet *1* of *3*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW9 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1400	1.29	372	5.26		22.5		1	TR	SLIGHT SHEEN ON WATER
		379	5.33		22.5		2	B – SC	
		378	5.48		22.8		3	B – SC	
		370	5.55		22.9		4	B – SC	
		365	5.57		22.9		5	B – SC	
		351	5.59		22.9		6	B – SC	
		347	5.59		22.9		7	B – SC	
		336	5.59		23.0		8	B – SC	
		331	5.57		23.0		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~9L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.740m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW9*

sheet *2* of *3*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW9 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		320	5.53		23.1		10	B – SC	
		314	5.49		23.1		11	B – SC	
		313	5.44		23.1		12	B – SC	
		307	5.39		23.1		13	B – SC	
		299	5.32		23.1		14	B – SC	
		292	5.24		23.1		15	B – SC	
		290	5.23		23.1		16	B – SC	
		288	5.20		23.1		17	B – SC	
		291	5.15		23.1		18	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW9*

sheet *3* of *3*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW9 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		294	5.15		23.1		19	B – SC	
		289	5.15		23.1		20	B – SC	
		287	5.13		23.1		21	B – SC	
		285	5.13		23.1		22	B – SC	
		282	5.12		23.1		23	B – SC	
		280	5.12		23.1		24	B – SC	
		283	5.12		23.1		25	B – SC	
		279	5.12		23.1		26	B – SC	
1440	2.96	276	5.12		23.1		27	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW10*

sheet *1* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW10 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1500	1.320	332	4.93		23.4		1	TR	
		330	4.87		23.8		2	B – SC	
		320	4.74		23.6		3	B – SC	
		319	4.73		23.6		4	B – SC	
		317	4.66		23.6		5	B – SC	
		315	4.63		23.8		6	B – SC	
		312	4.60		23.8		7	B – SC	
		310	4.54		23.9		8	B – SC	
		308	4.51		23.9		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~9L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 5.90m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW10*

sheet *2* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW10 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		303	4.55		23.9		10	B – SC	
		303	4.48		23.9		11	B – SC	
		292	4.43		23.9		12	B – SC	
		293	4.45		23.9		13	B – SC	
		298	4.42		23.9		14	B – SC	
		296	4.33		23.9		15	B – SC	
		297	4.29		23.9		16	B – SC	
		292	4.26		23.9		17	B – SC	
		297	4.25		23.9		18	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW10*

sheet *3* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW10 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		294	4.42		23.9		19	B – SC	
		296	4.23		23.9		20	B – SC	
		299	4.23		23.9		21	B – SC	
		295	4.23		23.9		22	B – SC	
		298	4.23		23.9		23	B – SC	
		294	4.23		23.9		24	B – SC	
		301	4.24		23.9		25	B – SC	
		304	4.24		23.9		26	B – SC	
		300	4.24		23.9		27	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW10*

sheet *4* of *4*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW10 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		298	4.26		23.9		28	B – SC	
		297	4.27		23.9		29	B – SC	
1545	3.20	295	4.25		23.9		30	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW11*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW11 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1230	1.960	252	6.42		19.7		1	B - CL	
		292	6.43		20.4		2	B – CL	
		300	6.37		21.1		3	B – CL	
		299	6.34		21.1		4	B – SC	
		298	6.31		21.2		5	B – SC	
		298	6.27		21.2		6	B – SC	
		296	6.27		21.3		7	B – SC	
		296	6.25		21.4		8	B – SC	
		296	6.25		21.6		9	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 4.50m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW11*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW11 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		296	6.25		21.8		10	B – SC	
		308	6.23		22.0		11	B – SC	
		307	6.13		22.0		12	B – SC	
		306	6.12		22.0		13	B – SC	
		308	6.11		22.0		14	B – SC	
1250	1.970	309	6.09		22.0		15	B – SC	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW12*

sheet *1* of *1*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☐ SAMPLE ID: MW12 WATER QUALITY METER:

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	PH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1230	DRY								

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 4.50m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW13*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW13 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1000	2.205	1082	6.72		19.8		1	B - CL	SLIGHT SHEEN AND ODOUR
		1077	6.74		19.9		2	B – CL	
		1085	6.77		20.2		3	B – CL	
		1160	6.82		20.9		4	B – CL	
		1205	6.86		21.4		5	B – CL	
		1201	6.88		21.6		6	B – CL	
		1171	6.89		21.8		7	B – CL	
		1160	6.90		21.8		8	B – CL	
		1131	6.91		21.7		9	B - CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4.5L in Well, >3 Well volumes removed before sampling

Total Depth of Well: 4.450m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW13*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*23/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW13 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour-Clarity	comments (PSP depth, algae, etc.)
		1126	6.96		21.5		10	B – CL	
		1119	7.07		21.5		11	B – CL	
		1115	7.21		21.4		12	B – CL	
		1120	7.22		21.4		13	B – CL	
		1119	7.22		21.4		14	B – CL	
1020	4.410	1115	7.18		21.5		15	B – CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW14*

sheet *1* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW14 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	PH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
1230	3.055	515	3.99		20.0		1	B - CL	
		469	6.58		20.9		2	B – CL	
		452	7.04		21.1		3	B – CL	
		483	7.16		21.3		4	B – CL	
		505	7.24		21.4		5	B – CL	
		507	7.18		21.4		6	B – CL	
		551	7.22		21.5		7	B – CL	
		557	7.35		21.5		8	B – CL	
		565	7.34		21.5		9	B – CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

~4L in Well, 3 Well volumes removed before sampling

Total Depth of Well: 4.90m

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: *MW14*

sheet *2* of *2*

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no: **E12723/04**

client:	*DEPARTMENT OF COMMERCE*	office:	*SYDNEY*
principal:	*DEPARTMENT OF CORRECTIVE SERVICES*	date:	*22/3/05*
project:	*STAGE 2 ESA*	by:	*GAH*
Location:	*LONG BAY CORRECTIONAL COMPLEX*	checked by:	*SD*

SAMPLED? ☒ SAMPLE ID: MW14 WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	Ph (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
		578	7.36		21.5		10	B – CL	
1520	3.110	580	7.28		21.3		11	B – CL	

Colour :

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity :

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW1

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour Clarity	comments (PSP depth, algae, etc.)
09 :00	1.88	592	4.63	-16	18.7	1.28	1L	Pale OB, SC	Total Depth 4.8m.
		461	5.20	-54	18.7	0.91	2L		
		570	5.31	-61	18.8	0.75	3L		
	1.64	476	5.35	-68	18.8	0.78	4L		
		460	5.36	-69	18.8	0.71	5L		
		455	5.37	-71	18.9	0.63	6L		
	1.71	451	2.36	-73	18.8	0.59	7L		
09 :30		442	5.39	-73	18.7	0.54	8L	TR	

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW2

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DUP1 DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour Clarity	comments (PSP, depth, algae, etc.)
09 :30	2.02	288	3.69	108	17.7	5.10	1L	GTR	Total Depth 5.56m.
		286	3.72	104	17.7	5.00	2L		
		284	3.74	98	17.7	4.83	3L		
	1.60	275	3.76	89	17.8	4.69	4L		
		271	3.84	76	17.8	4.31	5L		
		264	3.81	72	17.8	4.03	6L		
	0.96	260	3.82	68	17.9	3.81	7L		
10 :00		251	3.79	63	17.9	3.28	8L		

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW3

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (oC)	DO (ppm)	volume (litre)	Odour / Colour Clarity	comments (PSP depth, algae etc.)
12 :30	3.25	314	5.85	52	17.5	7.41	1 »	DG-BK, CL	Total Depth 5.50
		312	5.87	54	17.5	6.05	1.5L		
		308	5.89	55	17.4	4.30	2L		
		306	5.90	52	17.4	3.56	2.5L		
		300	5.84	53	17.4	3.09	3L		
		294	5.88	51	17.4	2.73	3.5L		
		291	5.90	55	17.4	2.59	4L	G, SC	
		289	5.91	53	17.4	2.18	4.5L		
13 :15	2.70	285	5.94	49	17.4	2.10	5L		

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW4

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour / Clarity	comments (PSP depth, algae, etc.)
10 :00	2.80	655	5.62	17.9	655	6.12	1L	C, TR	Total Depth 4.5m
		656	5.63	17.8	656	4.55	1.5L		
		656	5.71	17.8	656	3.96	2L		
		657	5.74	17.8	657	2.75	2.5L		
	2.78	657	5.81	17.8	657	2.55	3 L		
		658	5.87	17.9	658	2.3	3.5L		
		658	5.88	17.9	658	2.01	4L		
		659	5.90	17.8	659	1.2	4.5L		
10 :30	2.75	659	5.92	17.8	659	1.67	5L		

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW5

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour / Clarity	comments (PSP depth, algae etc.)
13 :30	3.0	766	6.34	49	18.2	1.95	1L	OB, SC	Total Depth 5.45m
		703	6.35	48	18.2	1.61	1.5L		
		760	6.36	48	18.2	1.32	2L		
		755	6.39	47	18.2	1.05	2.5L		
	2.74	751	6.40	46	18.2	0.85	3L		
		747	6.40	45	18.2	0.71	3.5L		
		741	6.41	45	18.2	0.64	4L		
		738	6.41	44	18.2	0.41	4.5L		
14 :00	2.35	729	6.40	44	18.2	0.20	5L	C, TR	

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW11

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
12 :00	2.40m	287	6.42	48	18.2	2.31	1L	C, TR	Total Depth 4.4m
		289	6.42	39	18.2	1.98	1.5L		
		295	6.42	34	18.2	1.64	2L		
		299	6.42	31	18.2	1.40	2.5L		
		304	6.43	27	18.2	1.15	3L		
		307	6.44	22	18.2	0.81	3.5L		
		311	6.45	17	18.2	0.62	4L		
		319	6.45	11	18.2	0.55	4.5L		
12 :30		324	6.47	3	18.2	0.40	5L	C, TR	

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW12

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
14 :00	0.80	567	4.17	-16	17.9	Ranging	1L	C, TR	
		561	4.19	-15	17.9		1.5L		
		558	4.20	-24	17.9		2L		
		554	4.23	-33	17.9		2.5L		
		549	4.25	-47	17.9		3L		
		544	4.27	-58	17.9		3.5L		
		537	4.29	-70	17.9		4L		
14 :30	Dry	531	4.31	-86	17.9		4.5L	C, TR	

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW13

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
14 :30	2.95	1012	6.45	11	17.6	2.07	1L	C, TR	
		1064		4	17.6	1.84	1.5L		
		1095		-8	17.6	1.65	2L		
		1123	6.51	-11	17.6	1.37	2.5L		
		1153		-23	17.6	1.04	3L		
		1162		-35	17.6	1.74	3.5L		
		1171		-55	17.6	1.39	4L		
15 :00	2.34	1174	6.67	-64	17.6	0.51	4.5L	C, TR	

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

Coffey Geosciences Pty Ltd
ACN 036 335 516

WELL ID: MW14

sheet 1 of 1

form E7.1 – ENVIRONMENTAL MONITORING WELL record of field measurements

job no:

client:	*Department of Commerce*	office:	*Sydney*
principal:		date:	*29/06/05*
project:	*Additional Groundwater Monitoring*	by:	*AD*
Location:	*Long Bay Correctional Facility Malabar, NSW*	checked by:	*AJB*

SAMPLED? ☐ SAMPLE ID: WATER QUALITY METER: *TPS WP-81*

DUPLICATE? ☐ DUPLICATE ID: DIP METER: *SOLINST 122*

Time	water depth (m)	Ec (uS/cm)	pH (units)	Eh (mV)	temp (°C)	DO (ppm)	volume (litre)	Odour / Colour- Clarity	comments (PSP depth, algae, etc.)
10 :30	1.67	453	5.52	-29	18.7	4.43	1L	C, TR	Total Depth 5.05
		451	5.52	-28	18.7	2.65	1.5L		
		449	5.53	-30	18.7	2.36	2L		
		448	5.55	-31	18.7	2.15	2.5L		
		446	5.54	-34	18.7	1.98	3L		
		445	5.55	-35	18.7	1.88	3.5L		
		442	5.54	-36	18.6	1.79	4L		
		440	5.53	-36	18.5	1.72	4.5L		
11 :00	1.30	436	5.54	-38	18.4	1.66	5L	C, TR	Total depth 5.05

Colour:

Colourless (**C**), White (**W**), Yellow (**Y**), Orange (**O**), Red (**R**), Brown (**B**), Blue (**Bl**), Green (**Gr**), Grey(**G**), Black (**Bk**).

*The preceding colours may also be described as "Light" (**Lt**) or "Dark"(**Dk**) eg. Light Grey (**Lt-G**).*

*Borderline colours may be described as a combination of 7colours. eg. Yellow/Brown (**Y/B**).*

Clarity:

Translucent (**TR**), Slightly Cloudy (**SC**), Cloudy (**CL**).

NOTES:

APPENDIX E1

LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

PHASE 1 INVESTIGATION NOVEMBER 2004

Amdel
www.amdel.com
A subsidiary of The Gribbles Group

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	4E2050
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd : P.O. Box 125 : NORTH RYDENSW 2113
Samples	:	26
Reference/Order	:	E12723/3/23793-4
Project	:	E12723/3 SITE B
Received Samples	:	01/11/04
Instructions	:	01/11/04
Date Reported	:	08/11/04

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 4E2050

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	Moisture (%w/w)	02/11/04	03/11/04	MNG 096
E1110	Polycyclic Aromatic Hydrocarbons	02/11/04	04/11/04	LHA 095
E1230	TPH C6-C9 by Purge & Trap	02/11/04	03/11/04	GTO 094
E1221	TPH (C10-C36)	02/11/04	02/11/04	GTO 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	02/11/04	04/11/04	GTO 094
E5910	Metals by ICP-AES	03/11/04	04/11/04	DLU 093
E5950	Mercury in Soil	03/11/04	04/11/04	DLU 093
E1290	Volatile Organic Compounds	02/11/04	03/11/04	GTO 094
E1080	Organochlorine Pesticides	02/11/04	03/11/04	LHA 095
E1090	Organophosphorus Pesticides	02/11/04	03/11/04	LHA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
NBL	Nina Blake	093
SHO	Steve Hopkins	093
JHO	Justin Hopghton	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153107	E153109	E153110	E153113	E153115
		CBH8	CBH8	CBH25	CBH26	CBH27
	Sample Id	0.2-0.3	2.5-2.7	0.0-0.1	0.0-0.1	0.15-.25
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	18%	10%	21%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	105%	112%	105%	101%	105%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153118	E153121	E153122	E153123	E153124
		CBH28	CBH28	CBH29	CBH29	CBH30
	Sample Id	0.15-.25	3.45-3.5	0.2-0.3	1.0-1.3	0.15-.25
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	6%	18%	8%	17%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	50
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	106%	113%	104%	106%	104%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153125	E153127	E153129	E153130	E153131
		CBH30	CBH31	CBH32	CBH32	
	Sample Id	1.0-1.3	0.2-0.3	0.0-0.1	1.0-1.2	DUP7
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%	6%	8%	15%	7%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	111%	103%	103%	103%	103%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No / Sample Id / PQL	E153132 / DUP8				
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%				
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	106%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23793-4

Project : E12723/3 SITE B

Analyte	Lab No	E153107	E153109	E153110	E153113	E153115
		CBH8	CBH8	CBH25	CBH26	CBH27
	Sample Id	0.2-0.3	2.5-2.7	0.0-0.1	0.0-0.1	0.15-.25
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	15	nd	nd	nd	7
Copper	5	39	nd	12	5	6
Nickel	2	19	nd	12	3	9
Lead	5	12	nd	20	nd	14
Zinc	5	50	38	89	43	57
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153118	E153121	E153122	E153123	E153124
		CBH28	CBH28	CBH29	CBH29	CBH30
	Sample Id	0.15-.25	3.45-3.5	0.2-0.3	1.0-1.3	0.15-.25
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	8	8	7	9
Copper	5	8	nd	5	nd	17
Nickel	2	nd	nd	4	nd	14
Lead	5	110	69	41	nd	21
Zinc	5	92	29	74	32	66
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153125	E153127	E153129	E153130	E153131
		CBH30	CBH31	CBH32	CBH32	
	Sample Id	1.0-1.3	0.2-0.3	0.0-0.1	1.0-1.2	DUP7
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	nd	nd	nd	nd	7
Nickel	2	nd	nd	3	nd	nd
Lead	5	14	nd	6	nd	54
Zinc	5	43	26	37	23	67
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153132				
	Sample Id	DUP8				
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	12				
Copper	5	15				
Nickel	2	13				
Lead	5	30				
Zinc	5	74				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23793-4

Project : E12723/3 SITE B

Analyte	Lab No	E153107	E153109	E153110	E153113	E153115
		CBH8	CBH8	CBH25	CBH26	CBH27
	Sample Id	0.2-0.3	2.5-2.7	0.0-0.1	0.0-0.1	0.15-.25
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
naphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.7	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.8	nd	nd	nd	nd
Pyrene	0.5	0.9	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
tal USEPA Priority PAHs	0.5	2.4	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	115%	117%	108%	108%	111%
Anthracene-d10-SURROGATE	1	112%	122%	106%	90%	110%
p-Terphenyl-D14-SURROGATE	1	114%	125%	108%	102%	112%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153118	E153121	E153122	E153123	E153124
		CBH28	CBH28	CBH29	CBH29	CBH30
	Sample Id	0.15-.25	3.45-3.5	0.2-0.3	1.0-1.3	0.15-.25
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	0.7	nd	0.7
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	1.2	nd	0.6
Pyrene	0.5	nd	nd	1.4	nd	0.7
Benz(a)anthracene	0.5	nd	nd	0.6	nd	nd
Chrysene	0.5	nd	nd	0.5	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	4.4	nd	2.0
2-Fluorobiphenyl-SURROGATE	1	106%	109%	112%	106%	108%
Anthracene-d10-SURROGATE	1	106%	110%	113%	107%	107%
p-Terphenyl-D14-SURROGATE	1	107%	110%	116%	108%	107%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153125	E153127	E153129	E153130	E153131
		CBH30	CBH31	CBH32	CBH32	
	Sample Id	1.0-1.3	0.2-0.3	0.0-0.1	1.0-1.2	DUP7
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
naphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.9	nd	nd	nd	nd
Pyrene	0.5	1.0	nd	nd	nd	nd
Benz(a)anthracene	0.5	0.6	nd	nd	nd	nd
Chrysene	0.5	0.7	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	1	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
tal USEPA Priority PAHs	0.5	4.4	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	113%	103%	109%	107%	112%
Anthracene-d10-SURROGATE	1	112%	103%	109%	107%	110%
p-Terphenyl-D14-SURROGATE	1	115%	105%	110%	109%	113%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153132				
	Sample Id	DUP8				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
naphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	0.6				
Anthracene	0.5	nd				
Fluoranthene	0.5	0.5				
Pyrene	0.5	0.6				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				
Total USEPA Priority PAHs	0.5	1.6				
2-Fluorobiphenyl-SURROGATE	1	109%				
Anthracene-d10-SURROGATE	1	108%				
p-Terphenyl-D14-SURROGATE	1	111%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23793-4

Project : E12723/3 SITE B

Analyte	Lab No	E153110	E153113	E153118	E153131	
		CBH25	CBH26	CBH28		
	Sample Id	0.0-0.1	0.0-0.1	0.15-.25	DUP7	
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd	nd	
a-BHC	0.1	nd	nd	nd	nd	
)HC	0.1	nd	nd	nd	nd	
Heptachlor	0.1	nd	nd	nd	nd	
Aldrin	0.1	nd	nd	nd	nd	
b-BHC	0.1	nd	nd	nd	nd	
d-BHC	0.1	nd	nd	nd	nd	
Oxychlordane	0.1	nd	nd	nd	nd	
Heptachlor epoxide	0.1	nd	nd	nd	nd	
Endosulfan 1	0.1	nd	nd	nd	nd	
Chlordane-Trans	0.1	nd	nd	nd	nd	
Chlordane-Cis	0.1	nd	nd	nd	nd	
trans-Nonachlor	0.1	nd	nd	nd	nd	
DDE	0.1	nd	nd	nd	nd	
Dieldrin	0.1	nd	nd	nd	nd	
Endrin	0.1	nd	nd	nd	nd	
DDD	0.1	nd	nd	nd	nd	
Endosulfan 2	0.1	nd	nd	nd	nd	
DDT	0.1	nd	nd	nd	nd	
Endosulfan sulfate	0.1	nd	nd	nd	nd	
Methoxychlor	0.1	nd	nd	nd	nd	
2.4.5.6-TCMX-SURROGATE	1	99%	91%	102%	96%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23793-4

Project : E12723/3 SITE B

Analyte	Lab No	E153110	E153113	E153118	E153131	
		CBH25	CBH26	CBH28		
	Sample Id	0.0-0.1	0.0-0.1	0.15-.25	DUP7	
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd	nd	nd	
Mevinphos	0.5	nd	nd	nd	nd	
Propetamphos	0.5	nd	nd	nd	nd	
Phorate	0.5	nd	nd	nd	nd	
Demeton-s-methyl	0.5	nd	nd	nd	nd	
Diazinon	0.5	nd	nd	nd	nd	
Disulfoton	0.5	nd	nd	nd	nd	
Ronnel	0.5	nd	nd	nd	nd	
Chlorpyrifos methyl	0.5	nd	nd	nd	nd	
Chlorpyrifos	0.5	nd	nd	nd	nd	
Merphos	0.5	nd	nd	nd	nd	
Parathion methyl	0.5	nd	nd	nd	nd	
Fenthion	0.5	nd	nd	nd	nd	
Malathion	0.5	nd	nd	nd	nd	
Fenitrothion	0.5	nd	nd	nd	nd	
Pirimiphos	0.5	nd	nd	nd	nd	
Stirophos	0.5	nd	nd	nd	nd	
Ethion	0.5	nd	nd	nd	nd	
Bolstar	0.5	nd	nd	nd	nd	
Fensulfothion	0.5	nd	nd	nd	nd	
Azinphos methyl	0.5	nd	nd	nd	nd	
Coumaphos	0.5	nd	nd	nd	nd	
2-Nitro-m-xylene-SURROGATE	1	109%	100%	109%	111%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23793-4

Project : E12723/3 SITE B

Analyte	Lab No	E153109	E153123	E153130		
		CBH8	CBH29	CBH32		
	Sample Id	2.5-2.7	1.0-1.3	1.0-1.2		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153109	E153123	E153130		
		CBH8	CBH29	CBH32		
	Sample Id	2.5-2.7	1.0-1.3	1.0-1.2		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2050
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23793-4
Project : E12723/3 SITE B

Analyte	Lab No	E153109	E153123	E153130		
		CBH8	CBH29	CBH32		
	Sample Id	2.5-2.7	1.0-1.3	1.0-1.2		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
chlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	98%	100%	100%		
Toluene-D8-SURROGATE	1	100%	100%	99%		
4-Bromofluorobenzene-SURROGATE	1	99%	98%	100%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref: ASET4834/ 6972 / 1 - 4
Your ref: 4E2050
NATA Accreditation No: 14484

8 November 2004

Amdel Laboratories Ltd
99 Mitchell Road
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No:02 –4902 4899

Dear Julie,
This report presents the results of four samples, forwarded by Amdel Laboratories Ltd, on 8 November 2004, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET4834 / 6972 / 1. 4E2050 - CBH25/0.0-0.1 - E153110.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET4834 / 6972 / 2. 4E2050 - CBH26/0.0-0.1 - E153113.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of soil and stones.
No asbestos detected.

Sample No. 3. ASET4834 / 6972 / 3. 4E2050 - CBH28/0.15-0.25 - E153118.
Approx dimensions 4.0 cm x 4.0 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 4. ASET4834 / 6972 / 4. 4E2050 - DUP 7 - E153131.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and fragments of glass.
No asbestos detected.

Analysed and reported by,

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

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Chain of Custody

Laboratory Quotation / Order No: | Job No: E12723/3 | Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL LIMITED	Sampled by: ANTON DELAT	Consigning Officer: Date Dispatched: 29/10/04
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW BITELLI	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAT	29/10/04	16:00	[illegible]	1/11	2:35

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals 8	VOC	ecl 9	Asbest	Sample Condition on Receipt
			SITE B									
E153107	Soil	Glass Jar + Ice	CBH8 0.2-0.3	25/10/04	✓	✓	✓	✓				
8			" 1.0-1.2	"								
9			" 2.5-2.7	"	✓	✓	✓	✓	✓			
10												
10			CBH25 0.0-0.1	28/10/04	✓	✓	✓	✓		✓	✓	
11			" 1.0-1.3	"								
12			" 2.0-2.28	"								
13			CBH26 0.0-0.1	"	✓	✓	✓	✓		✓	✓	
14			" 0.9-1.0	"								
15			CBH27 0.15-0.25	"	✓	✓	✓	✓				
16			" 1.0-1.3	"								
17			" 1.8-1.9	"								
18			CBH28 0.15-0.25	"	✓	✓	✓	✓	✓	✓	✓	
19			" 1.0-1.2	"								
20			" 2.5-2.6	"								
21			" 3.45-3.5	"	✓	✓	✓	✓				
22			CBH29 0.2-0.3	"	✓	✓	✓	✓				

Analyses Required

1 NOV 2004
4E2050

Special Laboratory Instructions:

Turnaround Required:

Detection Limits:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on re[illegible]nd fax back to Coffey. BLUE: To be returned with results.

2003/Y1-01

Coffey

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 4E2050

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 4E2050

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 4E2050

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E153107,E153127)							
C6-C9 Fraction	100	88		88%			
E1221 TPH in Soil (E153107,E153127)							
C10-C14 Fraction							
C15-C28 Fraction	550	540		100%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E153107,E153127)							
Benzene	10	10		105%			
Toluene	10	11		107%			
Ethylbenzene	10	11		108%			
m&p-Xylene	20	22		111%			
o-Xylene	10	11		110%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	86			86%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	440			79%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	11			108%		
Toluene	10	11			112%		
Ethylbenzene	10	11			109%		
m&p-Xylene	20	23			113%		
o-Xylene	10	12			118%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E153107,E153127)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E153127)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E153107,E153127)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E153107,E153127)							
Arsenic	50	45		90%			
Cadmium	50	47		93%			
Chromium	50	39		79%			
Copper	50	61		122%			
Nickel	50	43		86%			
Lead	50	41		81%			
Zinc	50	46		91%			
E5950 Mercury in Soil (E153107,E153127)							
Mercury	0.50	0.44		87%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	47	45		94%	90%	
Cadmium	50	47	45		93%	91%	
Chromium	50	45	43		89%	85%	
Copper	50	52	50		104%	100%	
Nickel	50	50	48		99%	96%	
Lead	50	47	45		94%	90%	
Zinc	50	47	46		94%	92%	
E5950 Mercury in Soil							
Mercury	0.50	0.42	0.37		83%	74%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E153107,E153109)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	14	15	15	6%	nd	nd		
Copper	38	39	39	2%	nd	nd		
Nickel	15	19	17	23%	nd	nd		
Lead	14	12	13	15%	nd	nd		
Zinc	49	50	50	2%	J	38	38	
E5950 Mercury in Soil (E153107)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2050

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E153107,E153127)							
Naphthalene	5	4.4		90%			
Acenaphthylene	5	4.4		87%			
Acenaphthene	5	4.6		91%			
Fluorene	5	4.6		91%			
Phenanthrene	5	4.4		88%			
Anthracene	5	4.6		91%			
Fluoranthene	5	4.4		87%			
Pyrene	5	4.4		87%			
Benz(a)anthracene	5	4.8		96%			
Chrysene	5	4.8		97%			
Benzo(b) & (k)fluoranthene	10	9		95%			
Benzo(a)pyrene	5	4.6		92%			
Indeno(1.2.3-cd)pyrene	5	4.8		95%			
Dibenz(a.h)anthracene	5	4.4		89%			
Benzo(g.h.i)perylene	5	4.8		95%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.4			87%		
Acenaphthylene	5	4.2			84%		
Acenaphthene	5	4.4			89%		
Fluorene	5	4.4			89%		
Phenanthrene	5	4.4			87%		
Anthracene	5	4.6			90%		
Fluoranthene	5	4.2			85%		
Pyrene	5	4.4			86%		
Benz(a)anthracene	5	4.2			85%		
Chrysene	5	4.6			90%		
Benzo(b) & (k)fluoranthene	10	9			89%		
Benzo(a)pyrene	5	4.2			82%		
Indeno(1.2.3-cd)pyrene	5	4.2			83%		
Dibenz(a.h)anthracene	5	4.2			84%		
Benzo(g.h.i)perylene	5	4.4			87%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E153107,E153127)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	0.7	0.7	0.7	0%	nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	0.8	0.8	0.8	0%	nd	nd		
Pyrene	1.0	0.9	1.0	10%	nd	nd		
Benz(a)anthracene	nd	nd			nd	nd		
Chrysene	nd	nd			nd	nd		
Benzo(b) & (k)fluoranthene	nd	nd			nd	nd		
Benzo(a)pyrene	nd	nd			nd	nd		
Indeno(1.2.3-cd)pyrene	nd	nd			nd	nd		
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			94%		
a-BHC	0.5	0.5			96%		
g-BHC	0.5	0.5			96%		
Heptachlor	0.5	0.5			98%		
Aldrin	0.5	0.5			96%		
b-BHC	0.5	0.5			98%		
d-BHC	0.5	0.5			92%		
Oxychlordane	0.5	0.5			98%		
Heptachlor epoxide	0.5	0.5			98%		
Endosulfan 1	0.5	0.5			96%		
Chlordane-Trans	0.5	0.5			96%		
Chlordane-Cis	0.5	0.5			96%		
trans-Nonachlor	0.5	0.5			98%		
DDE	1	1.0			96%		
Dieldrin	0.5	0.5			96%		
Endrin	0.5	0.5			98%		
DDD	1	1.0			96%		
Endosulfan 2	0.5	0.5			96%		
DDT	1	1.0			99%		
Endosulfan sulfate	0.5	0.5			96%		
Methoxychlor	0.5	0.5			102%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	4.2			82%		
Mevinphos	5	4.8			94%		
Ethoprop	5	4.8			96%		
Fluorate	5	4.8			96%		
Demeton-s-methyl	5	5.0			98%		
Diazinon	5	4.8			96%		
Disulfoton	5	4.8			96%		
Ronnel	5	4.8			96%		
Chlorpyrifos methyl	5	4.8			96%		
Chlorpyrifos	5	4.8			96%		
Parathion methyl	5	4.8			96%		
Fenthion	5	4.8			94%		
Malathion	5	4.8			94%		
Fenitrothion	5	4.8			96%		
Prothiophos	5	4.8			96%		
Crotophos	5	4.4			88%		
Ethion	5	4.8			96%		
Bolstar	5	4.8			96%		
Fensulfothion	5	5.2			104%		
Azinphos methyl	5	4.8			96%		
Coumaphos	5	4.8			94%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Profenophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	8.8			87%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	11			107%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			91%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8			84%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	8			85%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2050

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 331 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick Soil – Site B FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 01/11/04 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3/23793-4	
Project:	E12723/3	SITE B
Our Reference Number :	4E2050	
Date Received by Amdel :	01/11/04	

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
#Moisture (%w/w)	E7500	16	
Polycyclic Aromatic Hydrocarbons	E1110	16	___ 1 Working Day
TPH C6-C9 by Purge & Trap	E1230	16	
TPH (C10-C36)	E1221	16	___ 2 Working Days
Benzene, Toluene, Ethylbenzene & Xylene	E1010	16	
Metals by ICP-AES	E5910	16	✓ 5 Working Days
Mercury in Soil	E5950	16	
Volatile Organic Compounds	E1290	3	___ Working Days
Organochlorine Pesticides	E1080	4	
Organophosphorus Pesticides	E1090	4	
Asbestos	E8110	4	
Samples on Hold (Soil)	E7600	10	
Australian GST	GST		

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	Yes / No / N/A
*	Samples received in good condition and appropriately preserved for all tests.	Yes / No / N/A
*	VOC/SVOC samples were received in teflon lined lids.	Yes / No / N/A
*	VOC samples were received with Zero Headspace.	Yes / No / N/A
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	Yes / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

ASForm. 223

amdel
www.amdel.com
A subsidiary of The Gribbles Group

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	4E2052
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd : P.O. Box 125 : NORTH RYDENSW 2113
Samples	:	28
Reference/Order	:	E12723/3/23795-8
Project	:	E12723/3 SITE D
Received Samples	:	01/11/04
Instructions	:	01/11/04
Date Reported	:	08/11/04

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc., Ph.D. (Chem.)
Manager - Environmental

Report No. : 4E2052

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	Moisture (%w/w)	03/11/04	04/11/04	MNG 096
E1110	Polycyclic Aromatic Hydrocarbons	02/11/04	05/11/04	LHA 095
E1230	TPH C6-C9 by Purge & Trap	02/11/04	03/11/04	GTO 094
E1221	TPH (C10-C36)	02/11/04	02/11/04	GTO 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	02/11/04	04/11/04	GTO 094
E5910	Metals by ICP-AES	01/11/04	03/11/04	DLU 093
E5950	Mercury in Soil	03/11/04	03/11/04	DLU 093
E1290	Volatile Organic Compounds	02/11/04	03/11/04	GTO 094
E1080	Organochlorine Pesticides	02/11/04	03/11/04	LHA 095
E1090	Organophosphorus Pesticides	02/11/04	03/11/04	LHA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
NBL	Nina Blake	093
SHO	Steve Hopkins	093
JHO	Justin Hopghton	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153177	E153178	E153179	E153180	E153181
		CBH9	CBH10MW1	CBH10MW1	CBH11MW2	CBH11MW2
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.2	0.0-0.1	1.0-1.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	14%	9%	8%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	10	nd	nd
C15-C28 Fraction	50	nd	70	140	nd	nd
C29-C36 Fraction	50	nd	80	70	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	95%	106%	108%	117%	110%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153183	E153185	E153186	E153187
		CBH12	CBH13MW3	CBH14MW4	CBH15	CBH16
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	8%	10%	11%	11%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	20	nd	nd	nd
C15-C28 Fraction	50	nd	70	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	112%	115%	114%	110%	112%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153188	E153189	E153190	E153191	E153192
		CBH17	CBH17	CBH18	CBH18	CBH19MW5
	Sample Id	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	9%	10%	13%	18%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	220
C29-C36 Fraction	50	nd	nd	nd	nd	200
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	117%	118%	118%	111%	113%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153193	E153194	E153195	E153196	E153197
		CBH19MW5	CBH20	CBH21	CBH22	CBH22
	Sample Id	4.0-4.3	1.0-1.3	0.0-0.1	0.0-0.1	1.0-1.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	16%	6%	7%	7%	12%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	50	nd
C29-C36 Fraction	50	nd	nd	nd	90	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	117%	113%	110%	112%	112%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198	E153199	E153200	E153201	E153202
		CBH23	CBH24	CBH24		
	Sample Id	1.0-1.3	0.0-0.1	1.0-1.3	DUP1	DUP2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	6%	16%	15%	10%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	20
C15-C28 Fraction	50	200	nd	nd	60	80
C29-C36 Fraction	50	140	nd	60	90	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	108%	117%	107%	96%	110%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153203	E153204			
	Sample Id	DUP5	DUP6			
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	6%	6%			
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	50	nd			
C29-C36 Fraction	50	60	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd			
Toluene	1	nd	nd			
Ethylbenzene	1	nd	nd			
m&p-Xylene	2	nd	nd			
o-Xylene	1	nd	nd			
4-Bromofluorobenzene-SURROGATE	1	96%	99%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23795-8

Project : E12723/3 SITE D

Analyte	Lab No	E153177	E153178	E153179	E153180	E153181
		CBH9	CBH10MW1	CBH10MW1	CBH11MW2	CBH11MW2
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.2	0.0-0.1	1.0-1.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	7	11	nd	7	nd
Copper	5	13	18	nd	11	11
Nickel	2	8	6	4	11	6
Lead	5	33	85	11	22	33
Zinc	5	51	86	26	32	100
E5950 Mercury in Soil						
Mercury	0.05	0.21	0.18	nd	0.06	0.12

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153183	E153185	E153186	E153187
		CBH12	CBH13MW3	CBH14MW4	CBH15	CBH16
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	9	nd	7	7	12
Copper	5	6	nd	14	14	18
Nickel	2	11	7	10	6	6
Lead	5	17	11	40	56	52
Zinc	5	30	14	81	95	89
E5950 Mercury in Soil						
Mercury	0.05	0.06	nd	nd	0.08	0.12

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153188	E153189	E153190	E153191	E153192
		CBH17	CBH17	CBH18	CBH18	CBH19MW5
	Sample Id	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1
	PQL					
E5910 Metals in Soil						
Arsenic	5	8	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	7	6	8	11	38
Copper	5	18	20	6	8	17
Nickel	2	3	5	12	22	38
Lead	5	54	64	12	11	14
Zinc	5	50	110	26	28	84
E5950 Mercury in Soil						
Mercury	0.05	0.34	nd	nd	0.06	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153193	E153194	E153195	E153196	E153197
		CBH19MW5	CBH20	CBH21	CBH22	CBH22
	Sample Id	4.0-4.3	1.0-1.3	0.0-0.1	0.0-0.1	1.0-1.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	13
Copper	5	nd	5	47	31	44
Nickel	2	nd	nd	3	8	13
Lead	5	nd	21	24	24	150
Zinc	5	6	41	47	40	130
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	0.38	0.06

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198	E153199	E153200	E153201	E153202
		CBH23	CBH24	CBH24		
	Sample Id	1.0-1.3	0.0-0.1	1.0-1.3	DUP1	DUP2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	0.6	nd	nd
Chromium	5	nd	nd	10	13	nd
Copper	5	28	nd	82	17	nd
Nickel	2	3	nd	13	4	7
Lead	5	76	6	120	94	12
Zinc	5	110	24	230	110	14
E5950 Mercury in Soil						
Mercury	0.05	0.10	nd	nd	0.42	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153203	E153204			
	Sample Id	DUP5	DUP6			
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	29	nd			
Nickel	2	5	nd			
Lead	5	22	11			
Zinc	5	36	42			
E5950 Mercury in Soil						
Mercury	0.05	0.27	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23795-8

Project : E12723/3 SITE D

Analyte	Lab No	E153177	E153178	E153179	E153180	E153181
		CBH9	CBH10MW1	CBH10MW1	CBH11MW2	CBH11MW2
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.2	0.0-0.1	1.0-1.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	2.0	nd	nd
Anthracene	0.5	nd	nd	0.6	nd	nd
Fluoranthene	0.5	nd	1.0	4.6	nd	nd
Pyrene	0.5	nd	1.2	5.2	nd	nd
Benz(a)anthracene	0.5	nd	0.6	2.4	nd	nd
Chrysene	0.5	nd	0.6	2.2	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	1	4	nd	nd
Benzo(a)pyrene	0.5	nd	0.7	2.2	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	0.6	1.4	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	0.5	1.2	nd	nd
Total USEPA Priority PAHs	0.5	nd	6.4	26	nd	nd
2-Fluorobiphenyl-SURROGATE	1	113%	110%	96%	87%	98%
Anthracene-d10-SURROGATE	1	113%	108%	98%	87%	98%
p-Terphenyl-D14-SURROGATE	1	113%	110%	97%	87%	98%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153183	E153185	E153186	E153187
		CBH12	CBH13MW3	CBH14MW4	CBH15	CBH16
	Sample Id	0.0-0.1	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	2.0	0.8
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	0.7	2.8	2.0
Pyrene	0.5	nd	nd	0.8	2.8	2.2
Benz(a)anthracene	0.5	nd	nd	nd	1.2	0.9
Chrysene	0.5	nd	nd	nd	1.2	1.0
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	2	2
Benzo(a)pyrene	0.5	nd	nd	nd	1.2	1.0
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	0.8	0.8
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	0.7	0.7
Total USEPA Priority PAHs	0.5	nd	nd	1.4	15	11
2-Fluorobiphenyl-SURROGATE	1	104%	106%	111%	108%	108%
Anthracene-d10-SURROGATE	1	104%	106%	111%	111%	107%
p-Terphenyl-D14-SURROGATE	1	106%	109%	113%	112%	108%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153188	E153189	E153190	E153191	E153192
		CBH17	CBH17	CBH18	CBH18	CBH19MW5
	Sample Id	0.0-0.1	1.0-1.3	0.0-0.1	1.0-1.3	0.0-0.1
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	1.2	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.7	2.6	nd	nd	nd
Pyrene	0.5	0.8	3.0	nd	nd	nd
Benz(a)anthracene	0.5	nd	1.2	nd	nd	nd
Chrysene	0.5	nd	1.2	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	3	nd	nd	nd
Benzo(a)pyrene	0.5	nd	1.4	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	1.2	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	1.0	nd	nd	nd
Total USEPA Priority PAHs	0.5	1.4	15	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	100%	114%	111%	107%	111%
Anthracene-d10-SURROGATE	1	101%	115%	113%	108%	110%
p-Terphenyl-D14-SURROGATE	1	102%	116%	112%	109%	112%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153193	E153194	E153195	E153196	E153197
		CBH19MW5	CBH20	CBH21	CBH22	CBH22
	Sample Id	4.0-4.3	1.0-1.3	0.0-0.1	0.0-0.1	1.0-1.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	0.6	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	1.0	0.7	1.6	nd
Pyrene	0.5	nd	1.0	0.8	2.0	nd
Benz(a)anthracene	0.5	nd	nd	nd	1.0	nd
Chrysene	0.5	nd	nd	nd	0.9	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	2	nd
Benzo(a)pyrene	0.5	nd	nd	nd	1.2	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	1.2	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	0.9	nd
Total USEPA Priority PAHs	0.5	nd	2.0	1.4	11	nd
2-Fluorobiphenyl-SURROGATE	1	102%	111%	111%	113%	117%
Anthracene-d10-SURROGATE	1	103%	113%	112%	115%	117%
p-Terphenyl-D14-SURROGATE	1	103%	112%	114%	114%	115%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198	E153199	E153200	E153201	E153202
		CBH23	CBH24	CBH24		
	Sample Id	1.0-1.3	0.0-0.1	1.0-1.3	DUP1	DUP2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
naphthylene	0.5	0.5	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	1.8	nd	nd	nd	nd
Anthracene	0.5	0.6	nd	nd	nd	nd
Fluoranthene	0.5	4.2	nd	0.6	1.0	nd
Pyrene	0.5	4.6	nd	0.7	1.0	nd
Benz(a)anthracene	0.5	2.0	nd	nd	0.6	nd
Chrysene	0.5	2.2	nd	nd	0.6	nd
Benzo(b) & (k)fluoranthene	1	5	nd	nd	1	nd
Benzo(a)pyrene	0.5	2.8	nd	nd	0.7	nd
Indeno(1.2.3-cd)pyrene	0.5	2.4	nd	nd	0.6	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	1.8	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	28	nd	1.2	5.6	nd
2-Fluorobiphenyl-SURROGATE	1	105%	112%	114%	113%	105%
Anthracene-d10-SURROGATE	1	106%	114%	116%	114%	105%
p-Terphenyl-D14-SURROGATE	1	107%	113%	116%	114%	107%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153203	E153204			
	Sample Id	DUP5	DUP6			
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	1.0	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	2.6	nd			
Pyrene	0.5	2.8	nd			
Benz(a)anthracene	0.5	1.2	nd			
Chrysene	0.5	1.2	nd			
Benzo(b) & (k)fluoranthene	1	3	nd			
Benzo(a)pyrene	0.5	1.4	nd			
Indeno(1.2.3-cd)pyrene	0.5	1.2	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	1.0	nd			
Total USEPA Priority PAHs	0.5	15	nd			
2-Fluorobiphenyl-SURROGATE	1	110%	109%			
Anthracene-d10-SURROGATE	1	111%	109%			
p-Terphenyl-D14-SURROGATE	1	111%	109%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23795-8

Project : E12723/3 SITE D

Analyte	Lab No	E153177	E153180	E153182	E153188	E153190
		CBH9	CBH11MW2	CBH12	CBH17	CBH18
	Sample Id	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd	nd	nd
BHC	0.1	nd	nd	nd	nd	nd
g-BHC	0.1	nd	nd	nd	nd	nd
Heptachlor	0.1	nd	nd	nd	nd	nd
Aldrin	0.1	nd	nd	nd	nd	nd
b-BHC	0.1	nd	nd	nd	nd	nd
d-BHC	0.1	nd	nd	nd	nd	nd
Oxychlordane	0.1	nd	nd	nd	nd	nd
Heptachlor epoxide	0.1	nd	nd	nd	nd	nd
Endosulfan 1	0.1	nd	nd	nd	nd	nd
Chlordane-Trans	0.1	nd	nd	nd	nd	nd
Chlordane-Cis	0.1	nd	nd	nd	nd	nd
trans-Nonachlor	0.1	nd	nd	nd	nd	nd
DDE	0.1	nd	nd	nd	nd	nd
Dieldrin	0.1	nd	nd	nd	nd	nd
Endrin	0.1	nd	nd	nd	nd	nd
DDD	0.1	nd	nd	nd	nd	nd
Endosulfan 2	0.1	nd	nd	nd	nd	nd
DDT	0.1	nd	nd	nd	nd	nd
Endosulfan sulfate	0.1	nd	nd	nd	nd	nd
Methoxychlor	0.1	nd	nd	nd	nd	nd
2.4.5.6-TCMX-SURROGATE	1	94%	90%	98%	93%	94%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198				
		CBH23				
	Sample Id	1.0-1.3				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	94%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23795-8

Project : E12723/3 SITE D

Analyte	Lab No	E153177	E153180	E153182	E153188	E153190
		CBH9	CBH11MW2	CBH12	CBH17	CBH18
	Sample Id	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd	nd	nd	nd
Mevinphos	0.5	nd	nd	nd	nd	nd
Ethoprop	0.5	nd	nd	nd	nd	nd
Phorate	0.5	nd	nd	nd	nd	nd
Demeton-s-methyl	0.5	nd	nd	nd	nd	nd
Diazinon	0.5	nd	nd	nd	nd	nd
Disulfoton	0.5	nd	nd	nd	nd	nd
Ronnel	0.5	nd	nd	nd	nd	nd
Chlorpyrifos methyl	0.5	nd	nd	nd	nd	nd
Chlorpyrifos	0.5	nd	nd	nd	nd	nd
Merphos	0.5	nd	nd	nd	nd	nd
Parathion methyl	0.5	nd	nd	nd	nd	nd
Fenthion	0.5	nd	nd	nd	nd	nd
Malathion	0.5	nd	nd	nd	nd	nd
Fenitrothion	0.5	nd	nd	nd	nd	nd
Prothiophos	0.5	nd	nd	nd	nd	nd
Stirophos	0.5	nd	nd	nd	nd	nd
Ethion	0.5	nd	nd	nd	nd	nd
Bolstar	0.5	nd	nd	nd	nd	nd
Fensulfothion	0.5	nd	nd	nd	nd	nd
Azinphos methyl	0.5	nd	nd	nd	nd	nd
Coumaphos	0.5	nd	nd	nd	nd	nd
2-Nitro-m-xylene-SURROGATE	1	114%	101%	109%	118%	119%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198				
		CBH23				
	Sample Id	1.0-1.3				
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Dimethoate	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Merphos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				
2-Nitro-m-xylene-SURROGATE	1	110%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3/23795-8

Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153185	E153187	E153188	E153191
		CBH12	CBH14MW4	CBH16	CBH17	CBH18
	Sample Id	0.0-0.1	1.0-1.3	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Bromobenzene	1	nd	nd	nd	nd	nd
Bromochloromethane	1	nd	nd	nd	nd	nd
Bromodichloromethane	1	nd	nd	nd	nd	nd
Bromoform	1	nd	nd	nd	nd	nd
Bromomethane	1	nd	nd	nd	nd	nd
n-Butylbenzene	1	nd	nd	nd	nd	nd
sec-Butylbenzene	1	nd	nd	nd	nd	nd
tert-Butylbenzene	1	nd	nd	nd	nd	nd
Carbon tetrachloride	1	nd	nd	nd	nd	nd
Chlorobenzene	1	nd	nd	nd	nd	nd
Chloroethane	1	nd	nd	nd	nd	nd
Chloroform	1	nd	nd	nd	nd	nd
Chloromethane	1	nd	nd	nd	nd	nd
2-Chlorotoluene	1	nd	nd	nd	nd	nd
4-Chlorotoluene	1	nd	nd	nd	nd	nd
Dibromochloromethane	1	nd	nd	nd	nd	nd
1.2-Dibromo-3-chloropropane	1	nd	nd	nd	nd	nd
1.2-Dibromoethane (EDB)	1	nd	nd	nd	nd	nd
Dibromomethane	1	nd	nd	nd	nd	nd
1.2-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.3-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.4-Dichlorobenzene	1	nd	nd	nd	nd	nd
Dichlorodifluoromethane	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153185	E153187	E153188	E153191
		CBH12	CBH14MW4	CBH16	CBH17	CBH18
	Sample Id	0.0-0.1	1.0-1.3	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
1.1-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloroethane	1	nd	nd	nd	nd	nd
1.1-Dichloroethane	1	nd	nd	nd	nd	nd
cis-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
trans-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.3-Dichloropropane	1	nd	nd	nd	nd	nd
2.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.1-Dichloropropylene	1	nd	nd	nd	nd	nd
cis-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
trans-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
Hexachlorobutadiene	1	nd	nd	nd	nd	nd
Isopropylbenzene	1	nd	nd	nd	nd	nd
p-Isopropyltoluene	1	nd	nd	nd	nd	nd
Methylene chloride	1	nd	nd	nd	nd	nd
Naphthalene	1	nd	nd	nd	nd	nd
n-Propylbenzene	1	nd	nd	nd	nd	nd
Styrene	1	nd	nd	nd	nd	nd
1.1.1.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
1.1.2.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
1.2.3-Trichlorobenzene	1	nd	nd	nd	nd	nd
1.2.4-Trichlorobenzene	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153182	E153185	E153187	E153188	E153191
		CBH12	CBH14MW4	CBH16	CBH17	CBH18
	Sample Id	0.0-0.1	1.0-1.3	1.0-1.3	0.0-0.1	1.0-1.3
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd	nd	nd
1.1.2-Trichloroethane	1	nd	nd	nd	nd	nd
chloroethene	1	nd	nd	nd	nd	nd
Trichlorofluoromethane	1	nd	nd	nd	nd	nd
1.2.3-Trichloropropane	1	nd	nd	nd	nd	nd
1.2.4-Trimethylbenzene	1	nd	nd	nd	nd	nd
1.3.5-Trimethylbenzene	1	nd	nd	nd	nd	nd
Vinyl chloride	1	nd	nd	nd	nd	nd
ortho-Xylene	1	nd	nd	nd	nd	nd
meta- & para-Xylene	2	nd	nd	nd	nd	nd
Pentafluorobenzene-SURROGATE	1	97%	97%	98%	98%	97%
Toluene-D8-SURROGATE	1	100%	100%	100%	100%	99%
4-Bromofluorobenzene-SURROGATE	1	100%	99%	99%	99%	98%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198				
		CBH23				
	Sample Id	1.0-1.3				
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198				
		CBH23				
	Sample Id	1.0-1.3				
	PQL					
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3/23795-8
Project : E12723/3 SITE D

Analyte	Lab No	E153198				
		CBH23				
	Sample Id	1.0-1.3				
	PQL					
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
chloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	98%				
Toluene-D8-SURROGATE	1	99%				
4-Bromofluorobenzene-SURROGATE	1	99%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref: ASET4832/ 6970 / 1 - 6
Your ref: 4E2052
NATA Accreditation No: 14484

8 November 2004

Amdel Laboratories Ltd
99 Mitchell Road
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No:02 –4902 4899

Dear Julie,

This report presents the results of six samples, forwarded by Amdel Laboratories Ltd, on 5 November 2004, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET4832 / 6970 / 1. 4E2052 - CBH12_0.0-0.1 - E153182.
Approx dimensions 4.0 cm x 4.0 cm x 2.0 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

Sample No. 2. ASET4832 / 6970 / 2. 4E2052 - CBH23_0.0-0.1 - E153198.
Approx dimensions 4.0 cm x 4.0 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 3. ASET4832 / 6970 / 3. 4E2052 - CBH14_1.0-1.3 - E153185.
Approx dimensions 4.0 cm x 4.0 cm x 1.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 4. ASET4832 / 6970 / 4. 4E2052 - CBH16_1.0-1.3 - E153187.
Approx dimensions 4.0 cm x 4.0 cm x 2.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

Sample No. 5. ASET4832 / 6970 / 5. 4E2052 - CB17_0.0-0.1 - E153188.
Approx dimensions 4.0 cm x 4.0 cm x 2.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

ASET

Sample No. 6. ASET4832 / 6970 / 6, 4E2052 - CB18_1.0-1.3 - E153191.
Approx dimensions 4.0 cm x 4.0 cm x 1.75 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Analysed and reported by,

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

NATA Accredited Laboratory
Number: 12984

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Chain of Custody

No: 23795

Laboratory Quotation / Order No: Job No: E12723 | 3 Sheet 1 of 4

Coffey

Dispatch to: (Address & Phone No.) AMDEC LIMITED	Sampled by: ANTON DELAC	Consigning Officer:
		Date Dispatched: 29/10/04
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW GREWCOCK	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	29/10/04	16:00	[illegible]	1/11	235

Comments	Sample Matrix	Container Type and Preservative	Sample No. (SITE D)	Date Sampled	PAHs	TPHs	BTEX	Metals: 8	VOC	OC/OP	Arsenic	Sample Condition on Receipt
					Analyses Required							
E153177	soil	Glass Jar + Ice	CBH9 0.0-0.1	25/10/04	✓	✓	✓	✓		✓		
			" 1.0-1.2									
			" 2.5-2.7									
			" 4.0-4.2									
8			CBH10 MW1 0.0-0.1		✓	✓	✓	✓				
9			" " 1.0-1.2		✓	✓	✓	✓				
			" " 2.5-2.7									
			" " 4.0-4.3									
80			CBH11 MW2 0.0-0.1	26/10/04	✓	✓	✓	✓		✓		
1			" " 1.0-1.3		✓	✓	✓	✓				
			" " 2.5-2.8									
			" " 4.0-4.3									
			" " 5.5-5.8									
2			CBH12 0.0-0.1		✓	✓	✓	✓	✓	✓	✓	
			1.0-1.3									
			2.5-2.6									
3			CBH13 MW3 0.0-0.1		✓	✓	✓	✓				

1 NOV 2004 WEST

Special Laboratory Instructions:

Detection Limits: Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign [illegible] and fax back to Coffey. BLUE: To be returned with results.

2003MT-05

Chain of Custody

No. 23796

Coffey

Laboratory Quotation / Order No.

Job No. 12733/5 Sheet 2 of 4

Dispatch to: (Address & Phone No.) Analabs

Sampled by: A.T. + D.C.A.C

Consigning Officer

Date Dispatched 24/10/04

Attention: Julie Collard

Project Manager / report results to: Chris Gentle

Courier Service

Consignment Note No.

Relinquished by:	Date	Time	Received by:	Date	Time
Andrew Tetlow	29/10/04	16:10			

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals	VOC	OCLOP	Asbestos	Sample Condition on Receipt
			SITE D Cont.									
	Soil	Glass jar 4oz	CBH13 MW3 0.0-1.3	26/10/04								
E153184			" " 2.5-2.8									
			" " 4.0-4.3									
			" " 5.5-5.8									
5			CBH14 MW4 0.0-0.1	27/10/04								
			" " 1.0-1.3									
			" " 2.5-2.8									
			" " 4.0-4.3									
6			CBH15 0.0-0.1									
			" 1.0-1.3									
			CBH16 0.0-0.1									
7			" 1.0-1.3									
			" 2.5-2.8									
			" 3.8-3.9									
8			CBH17 0.0-0.1									
9			" 1.0-1.3									
			" 2.5-2.8									

Analyses Required

1 NOV 2004

E153184

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign & return and fax back to Coffey. BLUE: To be returned with results.

2005/11-01

Chain of Custody

No: 23797

Coffey

Laboratory Quotation / Order No.

Job No.: 17431

Sheet: 2 of 4

Dispatch to (Address & Phone No.): Ardel Limited

Sampled by: AC DL

Consigning Officer:

Date Dispatched: 27/10/04

Attention: Julie Edwards

Project Manager to report results to:

Courier Service:

Consignment Note No.:

Relinquished by: Alan Dale

Date: 27/10/04 Time: 10:00

Received by:

Date: 27/10/04 Time: 10:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	M/A/Hs – BTEX	Metals: 10	VOC	OC/OP	Asbestos	Sample Condition on Receipt
			SITE D Cont.									
E153190	Soil	Glass Jar + Ice	CBH17 4.0-4.3	27/10/04								
1			CBH18 0.0-0.1									
			" 1.0-1.3									
2			" 2.2-2.4									
			CBH19/MW5 0.0-0.1									
			" " 1.0-1.3									
3			" " 2.5-2.8									
			" " 4.0-4.3									
4			CBH20 0.0-0.1									
			" 1.0-1.3									
5			" 2.5-2.8									
			CBH21 0.0-0.1									
			" 1.0-1.3									
6			" 2.5-2.8									
7			CBH22 0.0-0.1									
			" 1.0-1.3									
			" 2.5-2.8									

Analyses Required

NOV 2004

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign receipt and fax back to Coffey. BLUE: To be returned with results.

20/03/11-01

Chain of Custody

No. 23790

Coffey

Laboratory Quotation / Order No.

Job No. E19775/3 Sheet 1 of 1

Dispatch to (Address & Phone No.): Amdel Limited

Sampled by:

Consulting Officer:

Date Dispatched: 27/10/04

Attention: John Edmond

Project Manager (report results to):

Courier Service:

Consignment Note No.

Relinquished by: Date: 27/10/04 Time: 16:00 Received by: Date: 1/11/04 Time: 9:22

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals	VOC	OCLOP	ASBESTOS	Sample Condition on Receipt
E153/98	Soil	Glass Jar + Lid	CB1123 0.0-0.1	27/10/04	✓	✓	✓	✓	✓	✓	✓	
9			1.0-1.3									
200			CB1124 0.0-0.1		✓	✓	✓	✓				
			" 1.0-1.3		✓	✓	✓	✓				
	Water	500mL Amber										
		2x40mL Vials										
01			DUP 1									
02			DUP 2									
			DUP 3									
			DUP 4									
03			DUP 5		✓	✓	✓	✓				
04			DUP 6									

1 NOV 2004

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign receipt and Tax back to Coffey. BLUE: To be returned with results.

Form 11-01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 4E2052

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes
Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 4E2052

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E153177,E153197)							
C6-C9 Fraction	100	86	91	86%	91%	89%	6%
E1221 TPH in Soil (E153177,E153197)							
C10-C14 Fraction							
C15-C28 Fraction	550	660	580	122%	107%	114%	13%
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E153177,E153197)							
Benzene	10	10	11	101%	113%	107%	11%
Toluene	10	10	12	104%	118%	111%	13%
Ethylbenzene	10	10	12	102%	117%	110%	13%
m&p-Xylene	20	20	24	101%	121%	111%	18%
o-Xylene	10	10	12	103%	124%	114%	19%

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	74	88		74%	88%	
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	540	500		99%	91%	
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.0	11		90%	106%	
Toluene	10	9	11		89%	111%	
Ethylbenzene	10	9	11		87%	111%	
m&p-Xylene	20	18	23		90%	115%	
o-Xylene	10	9	12		93%	119%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E153177,E153178)								
C6-C9 Fraction	nd	nd			nd	nd		
E1230 TPH in Soil by Purge & Trap/GC-MS (E153197)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E153177,E153178)								
C10-C14 Fraction	nd	nd			nd	nd		
C15-C28 Fraction	nd	nd			70	70	70	0%
C29-C36 Fraction	nd	nd			80	80	80	0%
E1221 TPH in Soil (E153197)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E153177,E153178)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1010 BTEX (P&T) in Soil (E153197)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	nd	nd			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd			
Toluene	1	nd	nd			
Ethylbenzene	1	nd	nd			
m&p-Xylene	2	nd	nd			
o-Xylene	1	nd	nd			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E153177,E153197)							
Arsenic	50	42	45	85%	89%	87%	5%
Cadmium	50	43	46	87%	91%	89%	5%
Chromium	50	54	43	109%	87%	98%	22%
Copper	50	54	47	108%	95%	101%	13%
Nickel	50	57	44	113%	88%	101%	26%
Lead	50	53	48	107%	96%	101%	11%
Zinc	50	59	37	118%	74%	96%	46%
E5950 Mercury in Soil (E153177,E153197)							
Mercury	0.50	0.51	0.39	102%	77%	90%	27%

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	39	39		78%	77%	
Cadmium	50	43	43		86%	86%	
Chromium	50	43	43		87%	85%	
Copper	50	47	47		95%	95%	
Nickel	50	46	47		93%	93%	
Lead	50	45	46		91%	91%	
Zinc	50	43	42		85%	84%	
E5950 Mercury in Soil							
Mercury	0.50	0.47	0.47		94%	93%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E153177,E153178)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	7	7	7	0%	9	11	10	19%
Copper	18	13	16	32%	13	18	16	32%
Nickel	8	8	8	0%	3	6	5	66%
Lead	34	33	34	2%	120	85	100	34%
Zinc	56	51	54	9%	J	86	86	
E5910 Metals in Soil (E153197)								
Arsenic	nd	nd						
Cadmium	1.0	nd	1.0					
Chromium	15	13	14	14%				
Copper	52	44	48	16%				
Nickel	14	13	14	7%				
Lead	130	150	140	14%				
Zinc	J	130	130					
E5950 Mercury in Soil (E153177,E153178)								
Mercury	0.22	0.21	0.22	4%	0.15	0.18	0.17	18%
E5950 Mercury in Soil (E153197)								
Mercury	0.07	0.06	0.07	15%				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
dmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E153177,E153197)							
Naphthalene	5	4.6	5.2	93%	102%	97%	10%
naphthylene	5	4.8	5.2	96%	104%	100%	8%
Acenaphthene	5	4.6	5.2	93%	103%	98%	10%
Fluorene	5	4.8	5.4	96%	107%	101%	11%
Phenanthrene	5	4.8	5.2	97%	103%	100%	7%
Anthracene	5	4.8	5.2	95%	104%	100%	9%
Fluoranthene	5	5.2	5.2	102%	105%	104%	3%
Pyrene	5	5.0	5.2	100%	105%	103%	5%
Benz(a)anthracene	5	5.0	5.4	100%	108%	104%	7%
Chrysene	5	4.8	5.2	96%	103%	99%	7%
Benzo(b) & (k)fluoranthene	10	11	11	107%	106%	106%	1%
Benzo(a)pyrene	5	5.6	5.2	113%	105%	109%	8%
Indeno(1.2.3-cd)pyrene	5	5.6	5.6	111%	111%	111%	0%
Dibenz(a.h)anthracene	5	5.0	5.4	101%	110%	105%	9%
nzo(g.h.i)perylene	5	5.0	5.2	99%	104%	102%	4%

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.6	4.4		93%	89%	
enaphthylene	5	4.6	4.4		93%	89%	
Acenaphthene	5	4.8	4.4		94%	89%	
Fluorene	5	4.6	4.4		92%	90%	
Phenanthrene	5	4.6	4.4		91%	89%	
Anthracene	5	4.8	4.4		97%	90%	
Fluoranthene	5	4.6	4.4		92%	88%	
Pyrene	5	4.4	4.4		90%	87%	
Benz(a)anthracene	5	4.6	4.4		90%	89%	
Chrysene	5	4.8	4.4		95%	89%	
Benzo(b) & (k)fluoranthene	10	9	9		92%	94%	
Benzo(a)pyrene	5	4.6	4.6		92%	92%	
Indeno(1.2.3-cd)pyrene	5	4.4	4.6		87%	93%	
Dibenz(a.h)anthracene	5	4.6	4.6		92%	91%	
hzo(g.h.i)perylene	5	4.6	4.6		91%	93%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E153177,E153178)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	J 0.65	nd	J 0.65		1.2	1.0	1.2	18%
Pyrene	J 0.67	nd	J 0.67		1.4	1.2	1.4	15%
Benz(a)anthracene	nd	nd			0.7	0.6	0.7	15%
Chrysene	nd	nd			0.6	0.6	0.6	0%
Benzo(b) & (k)fluoranthene	nd	nd			1	1	1	0%
Benzo(a)pyrene	nd	nd			0.7	0.7	0.7	0%
Indeno(1.2.3-cd)pyrene	nd	nd			0.7	0.6	0.7	15%
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			0.5	0.5	0.5	0%

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E153197)								
Naphthalene	nd	nd						
enaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
hzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
naphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	nd	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	nd	nd			
Pyrene	0.5	nd	nd			
Benz(a)anthracene	0.5	nd	nd			
Chrysene	0.5	nd	nd			
Benzo(b) & (k)fluoranthene	1	nd	nd			
Benzo(a)pyrene	0.5	nd	nd			
Indeno(1.2.3-cd)pyrene	0.5	nd	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
nzo(g.h.i)perylene	0.5	nd	nd			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1080 Organochlorine Pesticides in Soil (E153177,E153197)							
HCB	0.5	0.5		94%			
a-BHC	0.5	0.5		100%			
g-BHC	0.5	0.5		100%			
Heptachlor	0.5	0.5		100%			
Aldrin	0.5	0.5		100%			
b-BHC	0.5	0.5		102%			
d-BHC	0.5	0.5		100%			
Oxychlordane	0.5	0.5		100%			
Heptachlor epoxide	0.5	0.5		100%			
Endosulfan 1	0.5	0.5		100%			
Chlordane-Trans	0.5	0.5		102%			
Chlordane-Cis	0.5	0.5		102%			
trans-Nonachlor	0.5	0.5		102%			
DDE	1	1.0		100%			
Dieldrin	0.5	0.5		100%			
Endrin	0.5	0.5		100%			
DDD	1	1.0		100%			
Endosulfan 2	0.5	0.5		100%			
DDT	1	1.0		100%			
Endosulfan sulfate	0.5	0.5		98%			
Methoxychlor	0.5	0.5		106%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			94%		
a-BHC	0.5	0.5			96%		
g-BHC	0.5	0.5			96%		
Heptachlor	0.5	0.5			98%		
Aldrin	0.5	0.5			96%		
b-BHC	0.5	0.5			98%		
d-BHC	0.5	0.5			92%		
Oxychlordane	0.5	0.5			98%		
Heptachlor epoxide	0.5	0.5			98%		
Endosulfan 1	0.5	0.5			96%		
Chlordane-Trans	0.5	0.5			96%		
Chlordane-Cis	0.5	0.5			96%		
trans-Nonachlor	0.5	0.5			98%		
DDE	1	1.0			96%		
Dieldrin	0.5	0.5			96%		
Endrin	0.5	0.5			98%		
DDD	1	1.0			96%		
Endosulfan 2	0.5	0.5			96%		
DDT	1	1.0			99%		
Endosulfan sulfate	0.5	0.5			96%		
Methoxychlor	0.5	0.5			102%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1080 Organochlorine Pesticides in Soil	(E153177)							
HCB	nd	nd						
a-BHC	nd	nd						
g-BHC	nd	nd						
Heptachlor	nd	nd						
Aldrin	nd	nd						
b-BHC	nd	nd						
d-BHC	nd	nd						
Oxychlordane	nd	nd						
Heptachlor epoxide	nd	nd						
Endosulfan 1	nd	nd						
Chlordane-Trans	nd	nd						
Chlordane-Cis	nd	nd						
trans-Nonachlor	nd	nd						
DDE	nd	nd						
Dieldrin	nd	nd						
Endrin	nd	nd						
DDD	nd	nd						
Endosulfan 2	nd	nd						
DDT	nd	nd						
Endosulfan sulfate	nd	nd						
Methoxychlor	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1090 OP Pesticides in Soil (E153177,E153197)							
Dichlorvos	5	5.8		116%			
Azinphos	5	4.8		94%			
Ethoprop	5	4.6		90%			
Phorate	5	4.4		88%			
Demeton-s-methyl	5	4.4		88%			
Diazinon	5	4.6		90%			
Disulfoton	5	4.6		90%			
Ronnel	5	4.6		92%			
Chlorpyrifos methyl	5	4.6		92%			
Chlorpyrifos	5	4.6		92%			
Parathion methyl	5	4.6		92%			
Fenthion	5	4.6		90%			
Malathion	5	4.6		92%			
Fenitrothion	5	4.6		90%			
Bromophos	5	4.8		94%			
Stirophos	5	5.0		100%			
Ethion	5	4.6		90%			
Bolstar	5	4.6		90%			
Fensulfothion	5	5.2		104%			
Azinphos methyl	5	5.2		102%			
Coumaphos	5	5.0		98%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	4.2			82%		
vinphos	5	4.8			94%		
Ethoprop	5	4.8			96%		
Phorate	5	4.8			96%		
Demeton-s-methyl	5	5.0			98%		
Diazinon	5	4.8			96%		
Disulfoton	5	4.8			96%		
Ronnel	5	4.8			96%		
Chlorpyrifos methyl	5	4.8			96%		
Chlorpyrifos	5	4.8			96%		
Parathion methyl	5	4.8			96%		
Fenthion	5	4.8			94%		
Malathion	5	4.8			94%		
Fenitrothion	5	4.8			96%		
bthiophos	5	4.8			96%		
Stirophos	5	4.4			88%		
Ethion	5	4.8			96%		
Bolstar	5	4.8			96%		
Fensulfothion	5	5.2			104%		
Azinphos methyl	5	4.8			96%		
Coumaphos	5	4.8			94%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1090 OP Pesticides in Soil (E153177)								
Dichlorvos	nd	nd						
Mevinphos	nd	nd						
Ethoprop	nd	nd						
Phorate	nd	nd						
Demeton-s-methyl	nd	nd						
Diazinon	nd	nd						
Disulfoton	nd	nd						
Ronnel	nd	nd						
Chlorpyrifos methyl	nd	nd						
Chlorpyrifos	nd	nd						
Parathion methyl	nd	nd						
Fenthion	nd	nd						
Malathion	nd	nd						
Fenitrothion	nd	nd						
Bothiophos	nd	nd						
Stirophos	nd	nd						
Ethion	nd	nd						
Bolstar	nd	nd						
Fensulfothion	nd	nd						
Azinphos methyl	nd	nd						
Coumaphos	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Azinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Bothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1290 Volatile Organic Compounds in Soil (E153182,E153197)							
Benzene	10	7.6		75%			
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10		96%			
Chloroethane							
Chloroform							
Chloromethane							
Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1-Dichloroethene	10	8		78%			
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	7		71%			
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
ichloroethene	10	7		73%			
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	8.8			87%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	11			107%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			91%		
1.2-Dichloroethane							
1,1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8			84%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
chloroethene	10	8			85%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1290 Volatile Organic Compounds in Soil (E153182)								
Benzene	nd	nd						
Bromobenzene	nd	nd						
Bromochloromethane	nd	nd						
Bromodichloromethane	nd	nd						
Bromoform	nd	nd						
Bromomethane	nd	nd						
n-Butylbenzene	nd	nd						
sec-Butylbenzene	nd	nd						
tert-Butylbenzene	nd	nd						
Carbon tetrachloride	nd	nd						
Chlorobenzene	nd	nd						
Chloroethane	nd	nd						
Chloroform	nd	nd						
Chloromethane	nd	nd						
2-Chlorotoluene	nd	nd						
4-Chlorotoluene	nd	nd						
Dibromochloromethane	nd	nd						
1.2-Dibromo-3-chloropropane	nd	nd						
1.2-Dibromoethane (EDB)	nd	nd						
Dibromomethane	nd	nd						
1.2-Dichlorobenzene	nd	nd						
1.3-Dichlorobenzene	nd	nd						
1.4-Dichlorobenzene	nd	nd						
Dichlorodifluoromethane	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1-Dichloroethene	nd	nd						
1.2-Dichloroethane	nd	nd						
1.1-Dichloroethane	nd	nd						
cis-1.2-Dichloroethene	nd	nd						
trans-1.2-Dichloroethene	nd	nd						
1.2-Dichloropropane	nd	nd						
1.3-Dichloropropane	nd	nd						
2.2-Dichloropropane	nd	nd						
1.1-Dichloropropylene	nd	nd						
cis-1.3-Dichloropropylene	nd	nd						
trans-1.3-Dichloropropylene	nd	nd						
Ethylbenzene	nd	nd						
Hexachlorobutadiene	nd	nd						
Isopropylbenzene	nd	nd						
p-Isopropyltoluene	nd	nd						
Methylene chloride	nd	nd						
Naphthalene	nd	nd						
n-Propylbenzene	nd	nd						
Styrene	nd	nd						
1.1.1.2-Tetrachloroethane	nd	nd						
1.1.2.2-Tetrachloroethane	nd	nd						
Tetrachloroethene	nd	nd						
Toluene	nd	nd						
1.2.3-Trichlorobenzene	nd	nd						
1.2.4-Trichlorobenzene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1.1-Trichloroethane	nd	nd						
1.1.2-Trichloroethane	nd	nd						
chloroethene	nd	nd						
Trichlorofluoromethane	nd	nd						
1.2.3-Trichloropropane	nd	nd						
1.2.4-Trimethylbenzene	nd	nd						
1.3.5-Trimethylbenzene	nd	nd						
Vinyl chloride	nd	nd						
ortho-Xylene	nd	nd						
meta- & para-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1,1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2052

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
chloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick

FROM: Client Services Cardiff

DATE: 01/11/04

Soil - site D

4E2052

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3/23795-8
Project:	E12723/3 SITE D
Our Reference Number :	4E2052A
Date Received by Amdel :	01/11/04

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Samples on Hold (Soil)	E7600	~~35~~	
Australian GST	GST	35	___ 1 Working Day
			___ 2 Working Days
			___ 5 Working Days
			___ Working Days

HOLD

Extra samples
- CBH23 2.5-2.7
- ~~DUP 6~~

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(Yes) / No / N/A
*	Samples received in good condition and appropriately preserved for all tests.	Yes / No / ~~N/A~~
*	VOC/SVOC samples were received in teflon lined lids.	Yes / No / ~~N/A~~
*	VOC samples were received with Zero Headspace.	Yes / No / ~~N/A~~
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	Yes / No / ~~N/A~~

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

amdel
www.amdel.com
A subsidiary of The Gribbles Group

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	4E2106
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	12
Reference/Order	:	E12723/3
Project	:	SITE B/D COC: 23627, 23630
Received Samples	:	05/11/04 Instructions : 05/11/04
Date Reported	:	12/11/04

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 4E2106

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	Moisture (%w/w)	09/11/04	10/11/04	MNG 096
E1110	Polycyclic Aromatic Hydrocarbons	09/11/04	11/11/04	LHA 095
E1230	TPH C6-C9 by Purge & Trap	09/11/04	10/11/04	GTO 094
E1221	TPH (C10-C36)	09/11/04	09/11/04	GTO 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	09/11/04	11/11/04	GTO 094
E5910	Metals by ICP-AES	09/11/04	10/11/04	DLU 093
E5950	Mercury in Soil	10/11/04	10/11/04	DLU 093
E1290	Volatile Organic Compounds	09/11/04	10/11/04	GTO 094
E1080	Organochlorine Pesticides	09/11/04	10/11/04	LHA 095
E1090	Organophosphorus Pesticides	09/11/04	10/11/04	LHA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
NBL	Nina Blake	093
SHO	Steve Hopkins	093
JHO	Justin Hopghton	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101

amdel

Job Number : 4E2106
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154896	E154897	E154898	E154899	E154900
		CBH58	CBH61	CBH61	CBH62	CBH62
	Sample Id	0.2-0.3	0.0-0.1	0.8-0.9	0.2-0.3	0.3-0.5
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	14%	8%	17%	11%	14%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	80	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	129%	128%	122%	124%	124%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106 Page 2 of 11
Client : Coffey Geosciences Pty Ltd plus Cover Page
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154901	E154902	E154904	E154905	E154906
		CBH64	CBH71		CBH65	CBH65
	Sample Id	0.2-0.4	0.0-0.1	DUP13	0.0-0.1	1.0-1.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	15%	17%	8%	8%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	100
C29-C36 Fraction	50	nd	nd	nd	nd	60
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	127%	123%	127%	126%	118%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106 Page 3 of 11

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154896	E154897	E154898	E154899	E154900
		CBH58	CBH61	CBH61	CBH62	CBH62
	Sample Id	0.2-0.3	0.0-0.1	0.8-0.9	0.2-0.3	0.3-0.5
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	1.0	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	2.6	nd	nd
Pyrene	0.5	nd	nd	3.2	nd	nd
Benz(a)anthracene	0.5	nd	nd	1.6	nd	nd
Chrysene	0.5	nd	nd	1.8	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	4	nd	nd
Benzo(a)pyrene	0.5	nd	nd	2.2	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	1.4	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	1.4	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	19	nd	nd
2-Fluorobiphenyl-SURROGATE	1	97%	98%	95%	99%	97%
Anthracene-d10-SURROGATE	1	98%	98%	96%	99%	97%
p-Terphenyl-D14-SURROGATE	1	100%	99%	96%	100%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154901	E154902	E154904	E154905	E154906
		CBH64	CBH71		CBH65	CBH65
	Sample Id	0.2-0.4	0.0-0.1	DUP13	0.0-0.1	1.0-1.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	0.6	1.2
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	1.4	nd	1.2	3.6
Pyrene	0.5	nd	1.6	nd	1.2	4.4
Benz(a)anthracene	0.5	nd	0.9	nd	0.5	1.8
Chrysene	0.5	nd	1.0	nd	0.6	1.6
Benzo(b) & (k)fluoranthene	1	nd	2	nd	nd	4
Benzo(a)pyrene	0.5	nd	1.0	nd	0.5	2.2
Indeno(1.2.3-cd)pyrene	0.5	nd	0.8	nd	nd	2.0
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	0.7	nd	nd	1.4
Total USEPA Priority PAHs	0.5	nd	9.4	nd	4.6	22
2-Fluorobiphenyl-SURROGATE	1	96%	97%	96%	98%	102%
Anthracene-d10-SURROGATE	1	97%	97%	96%	99%	102%
p-Terphenyl-D14-SURROGATE	1	98%	99%	97%	99%	105%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106 Page 5 of 11

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154896	E154897	E154898	E154899	E154900
		CBH58	CBH61	CBH61	CBH62	CBH62
	Sample Id	0.2-0.3	0.0-0.1	0.8-0.9	0.2-0.3	0.3-0.5
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	nd	nd	8	nd	nd
Nickel	2	3	nd	nd	nd	nd
Lead	5	nd	11	40	nd	nd
Zinc	5	19	54	38	30	9
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	0.05	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154901	E154902	E154904	E154905	E154906
		CBH64	CBH71		CBH65	CBH65
	Sample Id	0.2-0.4	0.0-0.1	DUP13	0.0-0.1	1.0-1.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	7	nd	nd	nd
Copper	5	nd	8	nd	13	10
Nickel	2	nd	6	nd	3	6
Lead	5	nd	12	nd	62	58
Zinc	5	6	23	30	64	92
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154897	E154900	E154902	E154904	E154906
		CBH61	CBH62	CBH71		CBH65
	Sample Id	0.0-0.1	0.3-0.5	0.0-0.1	DUP13	1.0-1.3
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Bromobenzene	1	nd	nd	nd	nd	nd
Bromochloromethane	1	nd	nd	nd	nd	nd
Bromodichloromethane	1	nd	nd	nd	nd	nd
Bromoform	1	nd	nd	nd	nd	nd
Bromomethane	1	nd	nd	nd	nd	nd
n-Butylbenzene	1	nd	nd	nd	nd	nd
sec-Butylbenzene	1	nd	nd	nd	nd	nd
tert-Butylbenzene	1	nd	nd	nd	nd	nd
Carbon tetrachloride	1	nd	nd	nd	nd	nd
Chlorobenzene	1	nd	nd	nd	nd	nd
Chloroethane	1	nd	nd	nd	nd	nd
Chloroform	1	nd	nd	nd	nd	nd
Chloromethane	1	nd	nd	nd	nd	nd
2-Chlorotoluene	1	nd	nd	nd	nd	nd
4-Chlorotoluene	1	nd	nd	nd	nd	nd
Dibromochloromethane	1	nd	nd	nd	nd	nd
1.2-Dibromo-3-chloropropane	1	nd	nd	nd	nd	nd
1.2-Dibromoethane (EDB)	1	nd	nd	nd	nd	nd
Dibromomethane	1	nd	nd	nd	nd	nd
1.2-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.3-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.4-Dichlorobenzene	1	nd	nd	nd	nd	nd
Dichlorodifluoromethane	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154897	E154900	E154902	E154904	E154906
		CBH61	CBH62	CBH71		CBH65
	Sample Id	0.0-0.1	0.3-0.5	0.0-0.1	DUP13	1.0-1.3
	PQL					
1.1-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloroethane	1	nd	nd	nd	nd	nd
1.1-Dichloroethane	1	nd	nd	nd	nd	nd
cis-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
trans-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.3-Dichloropropane	1	nd	nd	nd	nd	nd
2.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.1-Dichloropropylene	1	nd	nd	nd	nd	nd
cis-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
trans-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
Hexachlorobutadiene	1	nd	nd	nd	nd	nd
Isopropylbenzene	1	nd	nd	nd	nd	nd
p-Isopropyltoluene	1	nd	nd	nd	nd	nd
Methylene chloride	1	nd	nd	nd	nd	nd
Naphthalene	1	nd	nd	nd	nd	nd
n-Propylbenzene	1	nd	nd	nd	nd	nd
Styrene	1	nd	nd	nd	nd	nd
1.1.1.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
1.1.2.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
1.2.3-Trichlorobenzene	1	nd	nd	nd	nd	nd
1.2.4-Trichlorobenzene	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3
Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154897	E154900	E154902	E154904	E154906
		CBH61	CBH62	CBH71		CBH65
	Sample Id	0.0-0.1	0.3-0.5	0.0-0.1	DUP13	1.0-1.3
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd	nd	nd
1.1.2-Trichloroethane	1	nd	nd	nd	nd	nd
Trichloroethene	1	nd	nd	nd	nd	nd
Trichlorofluoromethane	1	nd	nd	nd	nd	nd
1.2.3-Trichloropropane	1	nd	nd	nd	nd	nd
1.2.4-Trimethylbenzene	1	nd	nd	nd	nd	nd
1.3.5-Trimethylbenzene	1	nd	nd	nd	nd	nd
Vinyl chloride	1	nd	nd	nd	nd	nd
ortho-Xylene	1	nd	nd	nd	nd	nd
meta- & para-Xylene	2	nd	nd	nd	nd	nd
Pentafluorobenzene-SURROGATE	1	97%	100%	99%	112%	94%
Toluene-D8-SURROGATE	1	103%	100%	100%	85%	77%
4-Bromofluorobenzene-SURROGATE	1	115%	109%	123%	107%	102%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154896	E154897	E154902	E154905	
		CBH58	CBH61	CBH71	CBH65	
	Sample Id	0.2-0.3	0.0-0.1	0.0-0.1	0.0-0.1	
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd	nd	
a-BHC	0.1	nd	nd	nd	nd	
g-BHC	0.1	nd	nd	nd	nd	
Heptachlor	0.1	nd	nd	nd	nd	
Aldrin	0.1	nd	nd	nd	nd	
b-BHC	0.1	nd	nd	nd	nd	
d-BHC	0.1	nd	nd	nd	nd	
Oxychlordane	0.1	nd	nd	nd	nd	
Heptachlor epoxide	0.1	nd	nd	nd	nd	
Endosulfan 1	0.1	nd	nd	nd	nd	
Chlordane-Trans	0.1	nd	nd	nd	nd	
Chlordane-Cis	0.1	nd	nd	nd	nd	
trans-Nonachlor	0.1	nd	nd	nd	nd	
DDE	0.1	nd	nd	nd	nd	
Dieldrin	0.1	nd	nd	nd	nd	
Endrin	0.1	nd	nd	nd	nd	
DDD	0.1	nd	nd	nd	nd	
Endosulfan 2	0.1	nd	nd	nd	nd	
DDT	0.1	nd	nd	nd	nd	
Endosulfan sulfate	0.1	nd	nd	nd	nd	
Methoxychlor	0.1	nd	nd	nd	nd	
2.4.5.6-TCMX-SURROGATE	1	106%	108%	101%	100%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2106

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : SITE B/D COC: 23627, 23630

Analyte	Lab No	E154896	E154897	E154902	E154905	
		CBH58	CBH61	CBH71	CBH65	
	Sample Id	0.2-0.3	0.0-0.1	0.0-0.1	0.0-0.1	
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd	nd	nd	
Mevinphos	0.5	nd	nd	nd	nd	
Ethoprop	0.5	nd	nd	nd	nd	
Phorate	0.5	nd	nd	nd	nd	
Demeton-s-methyl	0.5	nd	nd	nd	nd	
Diazinon	0.5	nd	nd	nd	nd	
Disulfoton	0.5	nd	nd	nd	nd	
Ronnel	0.5	nd	nd	nd	nd	
Chlorpyrifos methyl	0.5	nd	nd	nd	nd	
Chlorpyrifos	0.5	nd	nd	nd	nd	
Merphos	0.5	nd	nd	nd	nd	
Parathion methyl	0.5	nd	nd	nd	nd	
Fenthion	0.5	nd	nd	nd	nd	
Malathion	0.5	nd	nd	nd	nd	
Fenitrothion	0.5	nd	nd	nd	nd	
Prothiophos	0.5	nd	nd	nd	nd	
Stirophos	0.5	nd	nd	nd	nd	
Ethion	0.5	nd	nd	nd	nd	
Bolstar	0.5	nd	nd	nd	nd	
Fensulfothion	0.5	nd	nd	nd	nd	
Azinphos methyl	0.5	nd	nd	nd	nd	
Coumaphos	0.5	nd	nd	nd	nd	
2-Nitro-m-xylene-SURROGATE	1	101%	104%	98%	99%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET4862/ 7015 / 1 - 4
Your ref: 4E2106 - E12723/3 -
NATA Accreditation No: 14484

15 November 2004

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of four samples, forwarded by Amdel Laboratories Ltd, on 9 November 2004, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET4862 / 7015 / 1. 4E2106 - E12723/3 - E154897 - CBH61 0.0-0.1.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 2. ASET4862 / 7015 / 2. 4E2106 - E12723/3 - E154900 - CBH62 0.3-0.5.
Approx dimensions 4.0 cm x 4.0 cm x 4.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 3. ASET4862 / 7015 / 3. 4E2106 - E12723/3 - E154902 - CBH71 0.0-0.1.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

ASET

Sample No. 4. ASET4862 / 7015 / 4. 4E2106 - E12723/3 - E154904 - DUP13.
Approx dimensions 4.0 cm x 4.0 cm x 4.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Analysed and reported by,

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

NATA Accredited Laboratory
Number: 1664

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Chain of Custody

No: 23527

Laboratory Quotation / Order No:

Job No: E17423/3

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL LIMITED	Sampled by: ANTON DELAC	Consigning Officer:
Attention: JULIE EDMUND	Project Manager: (Report results to) ANDREW BARCLAY	Courier Service:
		Date Dispatched: 4/11/2004
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	3/11/04	16:00		5/11/04	0900

Comments	Sample Matrix	Container Type and Preservative	Sample No. (B) Site B	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: E	VOC	OCP	Asbestos	Sample Condition on Receipt
E154896	Soil	Glass Jar + Ice	CBH 58 0.2-0.3	1/11/2004	/	/	/	/		/	/	
97			CBH 61 0.0-0.1		/	/	/	/	/	*	/	
98			CBH 61 0.8-0.9		/	/	/	/				
99			CBH 62 0.2-0.3		/	/	/	/				
900			CBH 62 0.3-0.5		/	/	/	/	/		/	
01			CBH 64 0.2-0.4		/	/	/	/				
			~~CBH 65 0.0-0.1~~									
			~~CBH 65 0.1-0.4~~									
			~~CBH 65 0.4-0.5~~									
02			CBH 71 0.0-0.1	3/11	/	/	/	/	/	/	/	
03			" 0.5-0.6	3/11								
			*									
04			DUP 13		/	/	/	/	/		/	

5 NOV 2004

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: Note — NO CBH 59 or CBH 60 *

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on [illegible] and fax back to Coffey. BLUE: To be returned with results.

20053/11-01

Chain of Custody

ND: 23629

Laboratory Quotation / Order No:

Job No: E12723/3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMOEL Limited	Sampled by: AD	Consigning Officer:
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW BARWICK	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DEAK				5/11/04	4.45
				5/11	5pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	VOC	OC+OP	Asbestos	Sample Condition on Receipt
E15490S	soil	Glass jar + ice	CBH65 0.0-0.1	2/11/04	✓	✓	✓	✓		✓		
↓06	"	"	" 1.0-1.3	"	✓	✓	✓	✓	✓	✓	✓	
↓07	"	"	" 2.1-2.3	"	✓	✓	✓	✓	✓	✓	✓	

Please add Cd, Cr, Cu, Ni, Pb, Zn, As, Hg to CBH65 2.4-2.5 instead of 8

5 NOV 2004

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on r[illegible] and fax back to Coffey. BLUE: To be returned with results.

20055/11-01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 4E2106

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes
Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 4E2106

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E154896)							
C6-C9 Fraction	100	84		84%			
E1221 TPH in Soil (E154896)							
C10-C14 Fraction							
C15-C28 Fraction	550	440		79%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E154896)							
Benzene	10	8.0		80%			
Toluene	10	8		83%			
Ethylbenzene	10	8		80%			
m&p-Xylene	20	16		81%			
o-Xylene	10	8		82%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	99			99%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	440			80%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.2			92%		
Toluene	10	9			93%		
Ethylbenzene	10	9			90%		
m&p-Xylene	20	17			86%		
o-Xylene	10	9			89%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E154896)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E154896)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E154896)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E154896)							
Naphthalene	5	4.4		86%			
Acenaphthylene	5	4.4		89%			
Acenaphthene	5	4.4		87%			
Fluorene	5	4.4		89%			
Phenanthrene	5	4.4		89%			
Anthracene	5	4.6		92%			
Fluoranthene	5	4.4		89%			
Pyrene	5	4.4		90%			
Benz(a)anthracene	5	4.4		87%			
Chrysene	5	4.4		89%			
Benzo(b) & (k)fluoranthene	10	9		90%			
Benzo(a)pyrene	5	4.6		92%			
Indeno(1.2.3-cd)pyrene	5	4.4		89%			
Dibenz(a.h)anthracene	5	4.4		86%			
Benzo(g.h.i)perylene	5	4.2		86%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.4			89%		
Acenaphthylene	5	4.6			90%		
Acenaphthene	5	4.6			91%		
Fluorene	5	4.6			91%		
Phenanthrene	5	4.6			91%		
Anthracene	5	4.6			92%		
Fluoranthene	5	4.6			91%		
Pyrene	5	4.6			91%		
Benz(a)anthracene	5	4.6			92%		
Chrysene	5	4.6			91%		
Benzo(b) & (k)fluoranthene	10	10			96%		
Benzo(a)pyrene	5	5.4			108%		
Indeno(1.2.3-cd)pyrene	5	5.0			102%		
Dibenz(a.h)anthracene	5	5.0			98%		
Benzo(g.h.i)perylene	5	4.8			95%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E154896)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E154896)							
Arsenic	50	51		102%			
Cadmium	50	50		100%			
Chromium	50	51		101%			
Copper	50	55		110%			
Nickel	50	50		100%			
Lead	50	45		91%			
Zinc	50	49		99%			
E5950 Mercury in Soil (E154896)							
Mercury	0.50	0.43		85%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	47			93%		
Cadmium	50	49			98%		
Chromium	50	51			101%		
Copper	50	51			102%		
Nickel	50	50			101%		
Lead	50	48			95%		
Zinc	50	49			98%		
E5950 Mercury in Soil							
Mercury	0.50	0.44			88%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E154896)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	nd	nd						
Nickel	3	3	3	0%				
Lead	nd	nd						
Zinc	17	19	18	11%				
E5950 Mercury in Soil (E154896)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1290 Volatile Organic Compounds in Soil	(E154897)						
Benzene	10	10		104%			
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10		97%			
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1-Dichloroethene	10	10		104%			
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8		80%			
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	10		103%			
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.4			93%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			96%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	8			81%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8			84%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			89%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1290 Volatile Organic Compounds in Soil (E154897)								
Benzene	nd	nd						
Bromobenzene	nd	nd						
Bromochloromethane	nd	nd						
Bromodichloromethane	nd	nd						
Bromoform	nd	nd						
Bromomethane	nd	nd						
n-Butylbenzene	nd	nd						
sec-Butylbenzene	nd	nd						
tert-Butylbenzene	nd	nd						
Carbon tetrachloride	nd	nd						
Chlorobenzene	nd	nd						
Chloroethane	nd	nd						
Chloroform	nd	nd						
Chloromethane	nd	nd						
2-Chlorotoluene	nd	nd						
4-Chlorotoluene	nd	nd						
Dibromochloromethane	nd	nd						
1.2-Dibromo-3-chloropropane	nd	nd						
1.2-Dibromoethane (EDB)	nd	nd						
Dibromomethane	nd	nd						
1.2-Dichlorobenzene	nd	nd						
1.3-Dichlorobenzene	nd	nd						
1.4-Dichlorobenzene	nd	nd						
Dichlorodifluoromethane	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1-Dichloroethene	nd	nd						
1.2-Dichloroethane	nd	nd						
1.1-Dichloroethane	nd	nd						
cis-1.2-Dichloroethene	nd	nd						
trans-1.2-Dichloroethene	nd	nd						
1.2-Dichloropropane	nd	nd						
1.3-Dichloropropane	nd	nd						
2.2-Dichloropropane	nd	nd						
1.1-Dichloropropylene	nd	nd						
cis-1.3-Dichloropropylene	nd	nd						
trans-1.3-Dichloropropylene	nd	nd						
Ethylbenzene	nd	nd						
Hexachlorobutadiene	nd	nd						
Isopropylbenzene	nd	nd						
p-Isopropyltoluene	nd	nd						
Methylene chloride	nd	nd						
Naphthalene	nd	nd						
n-Propylbenzene	nd	nd						
Styrene	nd	nd						
1.1.1.2-Tetrachloroethane	nd	nd						
1.1.2.2-Tetrachloroethane	nd	nd						
Tetrachloroethene	nd	nd						
Toluene	nd	nd						
1.2.3-Trichlorobenzene	nd	nd						
1.2.4-Trichlorobenzene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2106

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1.1-Trichloroethane	nd	nd						
1.1.2-Trichloroethane	nd	nd						
Trichloroethene	nd	nd						
Trichlorofluoromethane	nd	nd						
1.2.3-Trichloropropane	nd	nd						
1.2.4-Trimethylbenzene	nd	nd						
1.3.5-Trimethylbenzene	nd	nd						
Vinyl chloride	nd	nd						
ortho-Xylene	nd	nd						
meta- & para-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			100%		
a-BHC	0.5	0.5			100%		
g-BHC	0.5	0.5			100%		
Heptachlor	0.5	0.5			100%		
Aldrin	0.5	0.5			100%		
b-BHC	0.5	0.5			100%		
d-BHC	0.5	0.5			94%		
Oxychlordane	0.5	0.5			100%		
Heptachlor epoxide	0.5	0.5			100%		
Endosulfan 1	0.5	0.5			100%		
Chlordane-Trans	0.5	0.5			100%		
Chlordane-Cis	0.5	0.5			100%		
trans-Nonachlor	0.5	0.5			100%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			100%		
Endrin	0.5	0.5			100%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			98%		
DDT	1	1.0			97%		
Endosulfan sulfate	0.5	0.5			98%		
Methoxychlor	0.5	0.5			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	4.6			92%		
Mevinphos	5	4.8			96%		
Ethoprop	5	4.8			96%		
Phorate	5	4.8			96%		
Demeton-s-methyl	5	5.0			100%		
Diazinon	5	4.8			94%		
Disulfoton	5	4.8			96%		
Ronnel	5	4.8			94%		
Chlorpyrifos methyl	5	4.8			94%		
Chlorpyrifos	5	4.8			94%		
Parathion methyl	5	4.6			92%		
Fenthion	5	4.6			92%		
Malathion	5	4.6			92%		
Fenitrothion	5	4.6			92%		
Prothiophos	5	4.8			94%		
Stirophos	5	4.6			92%		
Ethion	5	4.8			94%		
Bolstar	5	4.8			94%		
Fensulfothion	5	5.6			112%		
Azinphos methyl	5	4.8			94%		
Coumaphos	5	4.6			92%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2106

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick

FROM: Client Services Cardiff

DATE: 05/11/04

Soil Site B & D

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3	
Project:	SITE B/D	COC: 23627, 23630
Our Reference Number :	4E2106	
Date Received by Amdel :	05/11/04	

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	10	
Polycyclic Aromatic Hydrocarbons	E1110	10	___ 1 Working Day
TPH C6-C9 by Purge & Trap	E1230	10	
TPH (C10-C36)	E1221	10	___ 2 Working Days
Benzene,Toluene,Ethylbenzene & Xylene	E1010	10	
Metals by ICP-AES	E5910	10	✓ 5 Working Days
Mercury in Soil	E5950	10	
Volatile Organic Compounds	E1290	5	___ Working Days
Organochlorine Pesticides	E1080	4	
Organophosphorus Pesticides	E1090	4	
Asbestos	E8110	5	
Samples on Hold (Soil)	E7600	2	
Australian GST	GST		

Received CBH 65 2·4 -2·5 (a Jar) instead of
CBH 65 2·1 -2·3 (as stated a COC)

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(Yes) / No / N/A
*	Samples received in good condition and appropriately preserved for all tests.	(Yes) / No / N/A
*	VOC/SVOC samples were received in teflon lined lids.	(Yes) / No / N/A
*	VOC samples were received with Zero Headspace.	(Yes) / No / N/A
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	(Yes) / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any

amdel
www.amdel.com
A subsidiary of The Gribbles Group

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	4E2108 Revision 1.
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	8
Reference/Order	:	E12723/3
Project	:	E12723/3 COC: 23631
Received Samples	:	05/11/04 Instructions : 05/11/04
Date Reported	:	23/11/04

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. Please replace all copies of the previously issued report with this amended report. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

REVISED REPORT - PLEASE REPLACE ALL COPIES OF REPORTS PREVIOUSLY ISSUED.

amdel

Report No. : 4E2108 Revision 1.

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E0110	Polycyclic Aromatic Hydrocarbons	09/11/04	10/11/04	LHA	095
E0230	TPH C6-C9 by purge & trap	09/11/04	10/11/04	GTO	094
E0221	TPH (C10-C36)	09/11/04	11/11/04	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	09/11/04	10/11/04	GTO	094
E4870	Dissolved Metals by ICP-MS	09/11/04	10/11/04	DLU	093
E4850	Mercury	11/11/04	11/11/04	DLU	093
E0290	Volatile Organic Compounds	09/11/04	10/11/04	GTO	094

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
NBL	Nina Blake	093
SHO	Steve Hopkins	093
JHO	Justin Hopghton	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	nd	nd	nd	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	nd	nd	nd	nd
Fluorene	1	nd	nd	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chryene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	92%	77%	82%	72%	74%
Anthracene-D10-SURROGATE	1	102%	92%	93%	83%	86%
p-Terphenyl-D14-SURROGATE	1	103%	93%	92%	85%	86%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1. Page 2 of 12

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154920				
		DUP1				
	Sample Id	5.11.04				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chryene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	71%				
Anthracene-D10-SURROGATE	1	78%				
p-Terphenyl-D14-SURROGATE	1	76%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1. Page 3 of 12

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	nd	nd	nd	nd
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	nd	nd	nd	nd
C15-C28 Fraction	100	nd	nd	nd	nd	nd
C29-C36 Fraction	100	nd	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	2	2	2	1	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	86%	107%	77%	109%	74%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154920	E154921	E154922		
		DUP1				
	Sample Id	5.11.04	TS	TB		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	--	--		
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	--	--		
C15-C28 Fraction	100	nd	--	--		
C29-C36 Fraction	100	nd	--	--		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	10	nd		
Toluene	1	2	10	nd		
Ethylbenzene	1	nd	9	nd		
m&p-Xylene	2	nd	20	nd		
o-Xylene	1	nd	10	nd		
4-Bromofluorobenzene-SURROGATE	1	98%	78%	78%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1. Page 5 of 12

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.005	0.001	nd	nd	nd
Cadmium	0.0001	nd	nd	nd	0.0002	nd
Chromium	0.001	nd	0.001	0.001	nd	0.001
Copper	0.001	0.001	nd	0.002	0.006	0.002
Nickel	0.001	0.003	0.001	nd	0.002	nd
Lead	0.001	nd	nd	nd	nd	nd
Zinc	0.002	0.117	0.004	0.008	0.051	0.008
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No / Sample Id / PQL	E154920 DUP1 5.11.04				
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1. Page 7 of 12

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
E0290 Volatile Organic Compounds (ug/L)						
Benzene	5	nd	nd	nd	nd	nd
Bromobenzene	5	nd	nd	nd	nd	nd
Bromochloromethane	5	nd	nd	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd	nd	nd
Bromoform	5	nd	nd	nd	nd	nd
Bromomethane	5	nd	nd	nd	nd	nd
n-Butylbenzene	5	nd	nd	nd	nd	nd
sec-Butylbenzene	5	nd	nd	nd	nd	nd
tert-Butylbenzene	5	nd	nd	nd	nd	nd
Carbon tetrachloride	5	nd	nd	nd	nd	nd
Chlorobenzene	5	nd	nd	nd	nd	nd
Chloroethane	5	nd	nd	nd	nd	nd
Chloroform	5	nd	nd	nd	nd	nd
Chloromethane	5	nd	nd	nd	nd	nd
2-Chlorotoluene	5	nd	nd	nd	nd	nd
4-Chlorotoluene	5	nd	nd	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd	nd	nd
1.2-Dibromo-3-chloropropane	5	nd	nd	nd	nd	nd
1.2-Dibromoethane (EDB)	5	nd	nd	nd	nd	nd
Dibromomethane	5	nd	nd	nd	nd	nd
1.2-Dichlorobenzene	5	nd	nd	nd	nd	nd
1.3-Dichlorobenzene	5	nd	nd	nd	nd	nd
1.4-Dichlorobenzene	5	nd	nd	nd	nd	nd
Dichlorodifluoromethane	5	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
1.1-Dichloroethene	5	nd	nd	nd	nd	nd
1.2-Dichloroethane	5	nd	nd	nd	nd	nd
1.1-Dichloroethane	5	nd	nd	nd	nd	nd
cis-1.2-Dichloroethene	5	nd	nd	nd	nd	nd
trans-1.2-Dichloroethene	5	nd	nd	nd	nd	nd
1.2-Dichloropropane	5	nd	nd	nd	nd	nd
1.3-Dichloropropane	5	nd	nd	nd	nd	nd
2.2-Dichloropropane	5	nd	nd	nd	nd	nd
1.1-Dichloropropylene	5	nd	nd	nd	nd	nd
cis-1.3-Dichloropropylene	5	nd	nd	nd	nd	nd
trans-1.3-Dichloropropylene	5	nd	nd	nd	nd	nd
Ethylbenzene	5	nd	nd	nd	nd	nd
Hexachlorobutadiene	5	nd	nd	nd	nd	nd
Isopropylbenzene	5	nd	nd	nd	nd	nd
p-Isopropyltoluene	5	nd	nd	nd	nd	nd
Methylene chloride	5	nd	nd	nd	nd	nd
Naphthalene	5	nd	nd	nd	nd	nd
n-Propylbenzene	5	nd	nd	nd	nd	nd
Styrene	5	nd	nd	nd	nd	nd
1.1.1.2-Tetrachloroethane	5	nd	nd	nd	nd	nd
1.1.2.2-Tetrachloroethane	5	nd	nd	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd	nd	nd
Toluene	5	nd	nd	nd	nd	nd
1.2.3-Trichlorobenzene	5	nd	nd	nd	nd	nd
1.2.4-Trichlorobenzene	5	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154915	E154916	E154917	E154918	E154919
		MW1	MW2	MW3	MW4	MW5
	Sample Id	5.11.04	5.11.04	5.11.04	5.11.04	5.11.04
	PQL					
1.1.1-Trichloroethane	5	nd	nd	nd	nd	nd
1.1.2-Trichloroethane	5	nd	nd	nd	nd	nd
Trichloroethene	5	nd	nd	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd	nd	nd
1.2.3-Trichloropropane	5	nd	nd	nd	nd	nd
1.2.4-Trimethylbenzene	5	nd	nd	nd	nd	nd
1.3.5-Trimethylbenzene	5	nd	nd	nd	nd	nd
Vinyl chloride	5	nd	nd	nd	nd	nd
ortho-Xylene	5	nd	nd	nd	nd	nd
meta- & para-Xylene	10	nd	nd	nd	nd	nd
Pentafluorobenzene-SURROGATE	1	100%	112%	100%	115%	111%
Toluene-D8-SURROGATE	1	97%	74%	100%	73%	101%
4-Bromofluorobenzene-SURROGATE	1	112%	128%	112%	101%	102%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154920				
		DUP1				
	Sample Id	5.11.04				
	PQL					
E0290 Volatile Organic Compounds (ug/L)						
Benzene	5	nd				
Bromobenzene	5	nd				
Bromochloromethane	5	nd				
Bromodichloromethane	5	nd				
Bromoform	5	nd				
Bromomethane	5	nd				
n-Butylbenzene	5	nd				
sec-Butylbenzene	5	nd				
tert-Butylbenzene	5	nd				
Carbon tetrachloride	5	nd				
Chlorobenzene	5	nd				
Chloroethane	5	nd				
Chloroform	5	nd				
Chloromethane	5	nd				
2-Chlorotoluene	5	nd				
4-Chlorotoluene	5	nd				
Dibromochloromethane	5	nd				
1.2-Dibromo-3-chloropropane	5	nd				
1.2-Dibromoethane (EDB)	5	nd				
Dibromomethane	5	nd				
1.2-Dichlorobenzene	5	nd				
1.3-Dichlorobenzene	5	nd				
1.4-Dichlorobenzene	5	nd				
Dichlorodifluoromethane	5	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154920				
		DUP1				
	Sample Id	5.11.04				
	PQL					
1.1-Dichloroethene	5	nd				
1.2-Dichloroethane	5	nd				
1.1-Dichloroethane	5	nd				
cis-1.2-Dichloroethene	5	nd				
trans-1.2-Dichloroethene	5	nd				
1.2-Dichloropropane	5	nd				
1.3-Dichloropropane	5	nd				
2.2-Dichloropropane	5	nd				
1.1-Dichloropropylene	5	nd				
cis-1.3-Dichloropropylene	5	nd				
trans-1.3-Dichloropropylene	5	nd				
Ethylbenzene	5	nd				
Hexachlorobutadiene	5	nd				
Isopropylbenzene	5	nd				
p-Isopropyltoluene	5	nd				
Methylene chloride	5	nd				
Naphthalene	5	nd				
n-Propylbenzene	5	nd				
Styrene	5	nd				
1.1.1.2-Tetrachloroethane	5	nd				
1.1.2.2-Tetrachloroethane	5	nd				
Tetrachloroethene	5	nd				
Toluene	5	nd				
1.2.3-Trichlorobenzene	5	nd				
1.2.4-Trichlorobenzene	5	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E2108 Revision 1.

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3

Project : E12723/3 COC: 23631

Analyte	Lab No	E154920				
		DUP1				
	Sample Id	5.11.04				
	PQL					
1.1.1-Trichloroethane	5	nd				
1.1.2-Trichloroethane	5	nd				
Trichloroethene	5	nd				
chlorofluoromethane	5	nd				
1.2.3-Trichloropropane	5	nd				
1.2.4-Trimethylbenzene	5	nd				
1.3.5-Trimethylbenzene	5	nd				
Vinyl chloride	5	nd				
ortho-Xylene	5	nd				
meta- & para-Xylene	10	nd				
Pentafluorobenzene-SURROGATE	1	112%				
Toluene-D8-SURROGATE	1	71%				
4-Bromofluorobenzene-SURROGATE	1	100%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

Chain of Custody

No: 23631

Laboratory Quotation / Order No:

Job No: E13723

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Amdel	Sampled by: Anton Debac	Consigning Officer:
Attention: Julie Edman	Project Manager: (report results to) Andrew Barwick	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A Barwick	5/11/04			5/11/04	4.40

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	VOC	Sample Condition on Receipt
E13723	water	1x500ml → 2x40ml → 1xreg	MW1	5/11/04	✓	✓	✓	✓	✓	
16			MW2		✓	✓	✓	✓	✓	
17			MW3		✓	✓	✓	✓	✓	
18			MW4		✓	✓	✓	✓	✓	
19			MW5		✓	✓	✓	✓	✓	
20			DUP1		✓	✓	✓	✓	✓	
21			TS				✓			
22			TB				✓			

5 NOV 2004 E13723

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on r... and fax back to Coffey. BLUE: To be returned with results.

20083/11-01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 4E2108 Revision 1.

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 4E2108 Revision 1.

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E154917)							
Naphthalene	10	8		80%			
Acenaphthylene	10	7		75%			
Acenaphthene	10	8		83%			
Fluorene	10	8		83%			
Phenanthrene	10	9		88%			
Anthracene	10	9		86%			
Fluoranthene	10	8		84%			
Pyrene	10	8		84%			
Benz(a)anthracene	10	8		78%			
Chryene	10	10		97%			
Benzo(b) & (k)fluoranthene	20	17		85%			
Benzo(a)pyrene	10	8		78%			
Indeno(1.2.3-cd)pyrene	10	7		75%			
Dibenz(a.h)anthracene	10	8		78%			
Benzo(g.h.i)perylene	10	8		81%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	9			86%		
Acenaphthylene	10	9			86%		
Acenaphthene	10	9			89%		
Fluorene	10	9			89%		
Phenanthrene	10	9			90%		
Anthracene	10	9			92%		
Fluoranthene	10	9			91%		
Pyrene	10	9			90%		
Benz(a)anthracene	10	8			84%		
Chryene	10	10			99%		
Benzo(b) & (k)fluoranthene	20	19			93%		
Benzo(a)pyrene	10	10			96%		
Indeno(1.2.3-cd)pyrene	10	8			80%		
Dibenz(a.h)anthracene	10	8			82%		
Benzo(g.h.i)perylene	10	9			88%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E154916)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chryene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chryene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0221 TPH in Water (ug/L) (E154915)							
C10-C14 Fraction							
C15-C28 Fraction	5500	3970		72%			
C29-C36 Fraction							

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	200			102%		
E0221 TPH in Water (ug/L)							
C10-C14 Fraction							
C15-C28 Fraction	5500	4450			81%		
C29-C36 Fraction							
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			114%		
Toluene	10	11			110%		
Ethylbenzene	10	10			103%		
m&p-Xylene	20	22			108%		
o-Xylene	10	11			110%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0230 TPH in Water by P&T/GC-MS (ug/L) (E154915)								
C6-C9 Fraction	ISD	nd						
E0221 TPH in Water (ug/L) (E154915)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E0010 BTEX (P&T) in Water (ug/L) (E154915)								
Benzene	ISD	nd						
Toluene	ISD	2	2					
Ethylbenzene	ISD	nd						
m&p-Xylene	ISD	nd						
o-Xylene	ISD	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd				
C15-C28 Fraction	100	nd				
C29-C36 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E4870 Dissolved Metals in Waters (E154915)							
Arsenic	0.100	0.110		110%			
Cadmium	0.1000	0.12		118%			
Chromium	0.100	0.118		118%			
Copper	0.100	0.112		112%			
Nickel	0.100	0.112		112%			
Lead	0.100	0.107		107%			
Zinc	0.100	0.120		120%			
E4850 Dissolved Mercury in Waters (E154915)							
Mercury	0.01	0.010		100%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4870 Dissolved Metals in Waters							
Arsenic	0.100	0.105			105%		
Cadmium	0.1000	0.11			108%		
Chromium	0.100	0.106			106%		
Copper	0.100	0.111			111%		
Nickel	0.100	0.107			107%		
Lead	0.100	0.103			103%		
Zinc	0.100	0.105			105%		
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E4870 Dissolved Metals in Waters (E154915)								
Arsenic	0.005	0.005	0.005	0%				
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	0.003	0.001	0.002	99%				
Nickel	0.003	0.003	0.003	0%				
Lead	nd	nd						
Zinc	0.111	0.117	0.114	5%				
E4850 Dissolved Mercury in Waters (E154915)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0290 Volatile Organic Compounds (ug/L)							
Benzene	25	29			116%		
Bromobenzene	25						
Bromochloromethane	25						
Bromodichloromethane	25						
Bromoform	25						
Bromomethane	25						
n-Butylbenzene	25						
sec-Butylbenzene	25						
tert-Butylbenzene	25						
Carbon tetrachloride	25						
Chlorobenzene	25	28			112%		
Chloroethane	25						
Chloroform	25						
Chloromethane	25						
2-Chlorotoluene	25						
4-Chlorotoluene	25						
Dibromochloromethane	25						
1.2-Dibromo-3-chloropropane	25						
1.2-Dibromoethane (EDB)	25						
Dibromomethane	25						
1.2-Dichlorobenzene	25						
1.3-Dichlorobenzene	25						
1.4-Dichlorobenzene	25						
Dichlorodifluoromethane	25						

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	25	29			114%		
1.2-Dichloroethane	25						
1.1-Dichloroethane	25						
cis-1.2-Dichloroethene	25						
trans-1.2-Dichloroethene	25						
1.2-Dichloropropane	25						
1.3-Dichloropropane	25						
2.2-Dichloropropane	25						
1.1-Dichloropropylene	25						
cis-1.3-Dichloropropylene	25						
trans-1.3-Dichloropropylene	25						
Ethylbenzene	25						
Hexachlorobutadiene	25						
Isopropylbenzene	25						
p-Isopropyltoluene	25						
Methylene chloride	25						
Naphthalene	25						
n-Propylbenzene	25						
Styrene	25						
1.1.1.2-Tetrachloroethane	25						
1.1.2.2-Tetrachloroethane	25						
Tetrachloroethene	25						
Toluene	25	29			115%		
1.2.3-Trichlorobenzene	25						
1.2.4-Trichlorobenzene	25						

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane	25						
1.1.2-Trichloroethane	25						
Trichloroethene	25	28			113%		
Trichlorofluoromethane	25						
1.2.3-Trichloropropane	25						
1.2.4-Trimethylbenzene	25						
1.3.5-Trimethylbenzene	25						
Vinyl chloride	25						
ortho-Xylene	25						
meta- & para-Xylene	25						

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0290 Volatile Organic Compounds (ug/L) (E154915)								
Benzene	ISD	nd						
Bromobenzene	ISD	nd						
Bromochloromethane	ISD	nd						
Bromodichloromethane	ISD	nd						
Bromoform	ISD	nd						
Bromomethane	ISD	nd						
n-Butylbenzene	ISD	nd						
sec-Butylbenzene	ISD	nd						
tert-Butylbenzene	ISD	nd						
Carbon tetrachloride	ISD	nd						
Chlorobenzene	ISD	nd						
Chloroethane	ISD	nd						
Chloroform	ISD	nd						
Chloromethane	ISD	nd						
2-Chlorotoluene	ISD	nd						
4-Chlorotoluene	ISD	nd						
Dibromochloromethane	ISD	nd						
1.2-Dibromo-3-chloropropane	ISD	nd						
1.2-Dibromoethane (EDB)	ISD	nd						
Dibromomethane	ISD	nd						
1.2-Dichlorobenzene	ISD	nd						
1.3-Dichlorobenzene	ISD	nd						
1.4-Dichlorobenzene	ISD	nd						
Dichlorodifluoromethane	ISD	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1-Dichloroethene	ISD	nd						
1.2-Dichloroethane	ISD	nd						
1.1-Dichloroethane	ISD	nd						
cis-1.2-Dichloroethene	ISD	nd						
trans-1.2-Dichloroethene	ISD	nd						
1.2-Dichloropropane	ISD	nd						
1.3-Dichloropropane	ISD	nd						
2.2-Dichloropropane	ISD	nd						
1.1-Dichloropropylene	ISD	nd						
cis-1.3-Dichloropropylene	ISD	nd						
trans-1.3-Dichloropropylene	ISD	nd						
Ethylbenzene	ISD	nd						
Hexachlorobutadiene	ISD	nd						
Isopropylbenzene	ISD	nd						
p-Isopropyltoluene	ISD	nd						
Methylene chloride	ISD	nd						
Naphthalene	ISD	nd						
n-Propylbenzene	ISD	nd						
Styrene	ISD	nd						
1.1.1.2-Tetrachloroethane	ISD	nd						
1.1.2.2-Tetrachloroethane	ISD	nd						
Tetrachloroethene	ISD	nd						
Toluene	ISD	nd						
1.2.3-Trichlorobenzene	ISD	nd						
1.2.4-Trichlorobenzene	ISD	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E2108 Revision 1.

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1.1-Trichloroethane	ISD	nd						
1.1.2-Trichloroethane	ISD	nd						
Trichloroethene	ISD	nd						
Trichlorofluoromethane	ISD	nd						
1.2.3-Trichloropropane	ISD	nd						
1.2.4-Trimethylbenzene	ISD	nd						
1.3.5-Trimethylbenzene	ISD	nd						
Vinyl chloride	ISD	nd						
ortho-Xylene	ISD	nd						
meta- & para-Xylene	ISD	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0290 Volatile Organic Compounds (ug/L)						
Benzene	5	nd				
Bromobenzene	5	nd				
Bromochloromethane	5	nd				
Bromodichloromethane	5	nd				
Bromoform	5	nd				
Bromomethane	5	nd				
n-Butylbenzene	5	nd				
sec-Butylbenzene	5	nd				
tert-Butylbenzene	5	nd				
Carbon tetrachloride	5	nd				
Chlorobenzene	5	nd				
Chloroethane	5	nd				
Chloroform	5	nd				
Chloromethane	5	nd				
2-Chlorotoluene	5	nd				
Chlorotoluene	5	nd				
Dibromochloromethane	5	nd				
1.2-Dibromo-3-chloropropane	5	nd				
1.2-Dibromoethane (EDB)	5	nd				
Dibromomethane	5	nd				
1.2-Dichlorobenzene	5	nd				
1.3-Dichlorobenzene	5	nd				
1.4-Dichlorobenzene	5	nd				
Dichlorodifluoromethane	5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	5	nd				
1.2-Dichloroethane	5	nd				
1.1-Dichloroethane	5	nd				
cis-1.2-Dichloroethene	5	nd				
trans-1.2-Dichloroethene	5	nd				
1.2-Dichloropropane	5	nd				
1.3-Dichloropropane	5	nd				
2.2-Dichloropropane	5	nd				
1.1-Dichloropropylene	5	nd				
cis-1.3-Dichloropropylene	5	nd				
trans-1.3-Dichloropropylene	5	nd				
Ethylbenzene	5	nd				
Hexachlorobutadiene	5	nd				
Isopropylbenzene	5	nd				
p-Isopropyltoluene	5	nd				
Methylene chloride	5	nd				
Naphthalene	5	nd				
n-Propylbenzene	5	nd				
Styrene	5	nd				
1.1.1.2-Tetrachloroethane	5	nd				
1.1.2.2-Tetrachloroethane	5	nd				
Tetrachloroethene	5	nd				
Toluene	5	nd				
1.2.3-Trichlorobenzene	5	nd				
1.2.4-Trichlorobenzene	5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E2108 Revision 1.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	5	nd				
1.1.2-Trichloroethane	5	nd				
Trichloroethene	5	nd				
Trichlorofluoromethane	5	nd				
1.2.3-Trichloropropane	5	nd				
1.2.4-Trimethylbenzene	5	nd				
1.3.5-Trimethylbenzene	5	nd				
Vinyl chloride	5	nd				
ortho-Xylene	5	nd				
meta- & para-Xylene	10	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
ABN 38 0081 27 802
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick

FROM: Client Services Cardiff

DATE: 05/11/04

Groundwater Site D

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3
Project:	GROUNDWATER BATCH COC:
Our Reference Number :	4E2108
Date Received by Amdel :	05/11/04

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	6	
TPH C6-C9 by purge & trap	E0230	6	___ 1 Working Day
TPH (C10-C36)	E0221	6	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	8	___ 2 Working Days
Dissolved Metals by ICP-MS	E4870	6	
Mercury	E4850	6	✓ 5 Working Days
Volatile Organic Compounds	E0290	6	
Australian GST	GST		___ Working Days

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(Yes) / No / N/A
*	Samples received in good condition and appropriately preserved for all tests.	(Yes) / No / N/A
*	VOC/SVOC samples were received in teflon lined lids.	(Yes) / No / N/A
*	VOC samples were received with Zero Headspace.	(Yes) / No / N/A
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	(Yes) / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any

non-comformance will be recorded on the final report.

ASForm. 223

Chain of Custody

No: 23631

Laboratory Quotation / Order No:

Job No: E12723 | 3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Amdel	Sampled by: Marlon Dolac	Consigning Officer:
		Date Dispatched: 5/11/04
Attention: Julie Edman	Project Manager: (report results to) Andrew Barwick	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Barwick AB	5/11/04			5/11/04	4:40

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: X	VOC	Sample Condition on Receipt
E15715	WATER	1 x 500ml	MW1	5/11/04	✓	✓	✓	✓	✓	
16		2 x 40ml	MW2		✓	✓	✓	✓	✓	
17		1 x Meg	MW3		✓	✓	✓	✓	✓	
18			MW4		✓	✓	✓	✓	✓	
19			MW5		✓	✓	✓	✓	✓	
20			DUP1		✓	✓	✓	✓	✓	
21			TS				✓			
22			TB				✓			

5 NOV 2004 E12723

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

No: 23631

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Andel	Sampled by: Anton Dolac	Consigning Officer: Date Dispatched: 5/11
Attention: Julie Edman	Project Manager: (report results to) Andrew Barwick	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Barwick AB	5/11/04			5/11/04	4.40

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	VOC	Sample Condition on Receipt
	WATER	1x500ml, 2x40ml, 1xreg →	MW 1	5/11/04	✓	✓	✓	✓	✓	
			MW 2		✓	✓	✓	✓	✓	
			MW 3		✓	✓	✓	✓	✓	
			MW 4		✓	✓	✓	✓	✓	
			MW 5		✓	✓	✓	✓	✓	
DUP MW1			DUP1		✓	✓	✓	✓	✓	
			TS				✓			
			TB				✓			

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

20053/11-01

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

amdel
www.amdel.com
A subsidiary of The Gribbles Group

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	4E1903A
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	21
Reference/Order	:	E12723/3 COC23789-90
Project	:	E12723/3 - AREA-D
Received Samples	:	13/10/04
Instructions	:	13/10/04
Date Reported	:	21/10/04

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

Report No. : 4E1903A

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	#Moisture (%w/w)	15/10/04	15/10/04	MCM 096
E1230	TPH C6-C9 by Purge & Trap	14/10/04	15/10/04	MNG 094
E1221	TPH (C10-C36)	14/10/04	15/10/04	MNG 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	14/10/04	15/10/04	MNG 094
E5910	Metals by ICP-AES	19/10/04	19/10/04	DLU 093
E5950	Mercury in Soil	19/10/04	19/10/04	DLU 093
E1110	Polycyclic Aromatic Hydrocarbons	14/10/04	15/10/04	LHA 095
E1290	Volatile Organic Compounds	14/10/04	20/10/04	MNG 094
E1080	Organochlorine Pesticides	14/10/04	15/10/04	LHA 095
E1090	Organophosphorus Pesticides	14/10/04	15/10/04	LHA 095
E0230	TPH C6-C9 by purge & trap	16/10/04	16/10/04	MNG 094
E0221	TPH (C10-C36)	15/10/04	15/10/04	MNG 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	16/10/04	16/10/04	MNG 094
E4870	Dissolved Metals by ICP-MS	19/10/04	19/10/04	DLU 093
E4850	Mercury	18/10/04	18/10/04	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	15/10/04	18/10/04	LHA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
NBL	Nina Blake	093
SHO	Steve Hopkins	093
JHO	Justin Hopghton	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
KE	Peter Keyte	101

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148280	E148281	E148283	E148285
		HA14	HA15	HA16	HA17	HA18
	Sample Id	0.0-0.1	0.4-0.5	0.0-0.1	0.0-0.1	0.0-0.1
	PQL					
#E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	10%	7%	6%	6%
#1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	240	nd	nd	nd
C29-C36 Fraction	50	nd	140	nd	nd	60
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	86%	102%	86%	88%	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148288	E148289	E148290	E148296	
		HA19	HA20	HA21	DUP 2	
	Sample Id	0.4-0.5	0.0-0.1	0.0-0.1	12.10.04	
	PQL					
#E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	10%	10%	5%	
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	
C15-C28 Fraction	50	nd	nd	nd	nd	
C29-C36 Fraction	50	nd	nd	nd	nd	
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	
Toluene	1	nd	nd	nd	nd	
Ethylbenzene	1	nd	nd	nd	nd	
m&p-Xylene	2	nd	nd	nd	nd	
o-Xylene	1	nd	nd	nd	nd	
4-Bromofluorobenzene-SURROGATE	1	86%	80%	80%	87%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148280	E148281	E148283	E148285
		HA14	HA15	HA16	HA17	HA18
	Sample Id	0.0-0.1	0.4-0.5	0.0-0.1	0.0-0.1	0.0-0.1
	PQL					
E5910 Metals in Soil						
Lead	5	40	81	45	42	37
Arsenic	5	nd	6	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	10	5	6	nd
Copper	5	10	15	20	13	10
Nickel	2	3	4	6	7	5
Zinc	5	66	59	66	66	50
E5950 Mercury in Soil						
Mercury	0.05	0.07	0.15	0.09	0.09	0.09

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148288	E148289	E148290	E148296	
		HA19	HA20	HA21	DUP 2	
	Sample Id	0.4-0.5	0.0-0.1	0.0-0.1	12.10.04	
	PQL					
E5910 Metals in Soil						
Lead	5	36	35	35	39	
Arsenic	5	5	nd	nd	nd	
Cadmium	0.5	nd	nd	nd	nd	
Chromium	5	nd	nd	nd	8	
Copper	5	6	7	6	17	
Nickel	2	3	3	3	11	
Zinc	5	49	64	66	71	
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	0.06	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3 COC23789-90

Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148280	E148281	E148283	E148285
		HA14	HA15	HA16	HA17	HA18
	Sample Id	0.0-0.1	0.4-0.5	0.0-0.1	0.0-0.1	0.0-0.1
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	1.0	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	11	nd	0.5	nd
Anthracene	0.5	nd	2.2	nd	nd	nd
Fluoranthene	0.5	nd	11	0.7	1.0	0.8
Pyrene	0.5	nd	11	0.8	1.2	1.0
Benz(a)anthracene	0.5	nd	5.0	nd	0.6	0.5
Chrysene	0.5	nd	4.4	nd	0.6	0.5
Benzo(b) & (k)fluoranthene	1	nd	7	nd	1	1
Benzo(a)pyrene	0.5	nd	4.8	0.5	0.7	0.6
Indeno(1.2.3-cd)pyrene	0.5	nd	3.4	nd	0.5	0.5
Dibenz(a.h)anthracene	0.5	nd	0.6	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	3.0	nd	0.5	0.5
Total USEPA Priority PAHs	0.5	nd	64	2.0	6.8	5.4
2-Fluorobiphenyl-SURROGATE	1	95%	90%	94%	93%	90%
Anthracene-d10-SURROGATE	1	95%	87%	96%	94%	93%
p-Terphenyl-D14-SURROGATE	1	94%	87%	97%	92%	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148288	E148289	E148290	E148296	
		HA19	HA20	HA21	DUP 2	
	Sample Id	0.4-0.5	0.0-0.1	0.0-0.1	12.10.04	
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	
Acenaphthylene	0.5	nd	nd	nd	nd	
Acenaphthene	0.5	nd	nd	nd	nd	
Fluorene	0.5	nd	nd	nd	nd	
Phenanthrene	0.5	nd	nd	nd	0.6	
Anthracene	0.5	nd	nd	nd	nd	
Fluoranthene	0.5	nd	nd	nd	1.0	
Pyrene	0.5	nd	0.5	nd	1.2	
Benz(a)anthracene	0.5	nd	nd	nd	0.6	
Chrysene	0.5	nd	nd	nd	0.5	
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	1	
Benzo(a)pyrene	0.5	nd	nd	nd	0.6	
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	
Total USEPA Priority PAHs	0.5	nd	0.5	nd	5.4	
2-Fluorobiphenyl-SURROGATE	1	95%	89%	89%	90%	
Anthracene-d10-SURROGATE	1	93%	90%	93%	92%	
p-Terphenyl-D14-SURROGATE	1	95%	90%	91%	89%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148281	E148296		
		HA14	HA16	DUP 2		
	Sample Id	0.0-0.1	0.0-0.1	12.10.04		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148281	E148296		
		HA14	HA16	DUP 2		
	Sample Id	0.0-0.1	0.0-0.1	12.10.04		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148281	E148296		
		HA14	HA16	DUP 2		
	Sample Id	0.0-0.1	0.0-0.1	12.10.04		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Chlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	74%	71%	86%		
Toluene-D8-SURROGATE	1	99%	106%	102%		
4-Bromofluorobenzene-SURROGATE	1	92%	117%	93%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3 COC23789-90

Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148281	E148296		
		HA14	HA16	DUP 2		
	Sample Id	0.0-0.1	0.0-0.1	12.10.04		
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd		
a-BHC	0.1	nd	nd	nd		
g-BHC	0.1	nd	nd	nd		
Heptachlor	0.1	nd	nd	nd		
Aldrin	0.1	nd	nd	nd		
b-BHC	0.1	nd	nd	nd		
d-BHC	0.1	nd	nd	nd		
Oxychlordane	0.1	nd	nd	nd		
Heptachlor epoxide	0.1	nd	nd	nd		
Endosulfan 1	0.1	nd	nd	nd		
Chlordane-Trans	0.1	nd	nd	nd		
Chlordane-Cis	0.1	nd	nd	nd		
trans-Nonachlor	0.1	nd	nd	nd		
DDE	0.1	nd	nd	nd		
Dieldrin	0.1	nd	nd	nd		
Endrin	0.1	nd	nd	nd		
DDD	0.1	nd	nd	nd		
Endosulfan 2	0.1	nd	nd	nd		
DDT	0.1	nd	nd	nd		
Endosulfan sulfate	0.1	nd	nd	nd		
Methoxychlor	0.1	nd	nd	nd		
2.4.5.6-TCMX-SURROGATE	1	75%	74%	77%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3 COC23789-90

Project : E12723/3 - AREA-D

Analyte	Lab No	E148277	E148281	E148296		
		HA14	HA16	DUP 2		
	Sample Id	0.0-0.1	0.0-0.1	12.10.04		
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd	nd		
Mevinphos	0.5	nd	nd	nd		
Isoprop	0.5	nd	nd	nd		
Phorate	0.5	nd	nd	nd		
Demeton-s-methyl	0.5	nd	nd	nd		
Diazinon	0.5	nd	nd	nd		
Disulfoton	0.5	nd	nd	nd		
Ronnel	0.5	nd	nd	nd		
Chlorpyrifos methyl	0.5	nd	nd	nd		
Chlorpyrifos	0.5	nd	nd	nd		
Merphos	0.5	nd	nd	nd		
Parathion methyl	0.5	nd	nd	nd		
Fenthion	0.5	nd	nd	nd		
Malathion	0.5	nd	nd	nd		
Fenitrothion	0.5	nd	nd	nd		
Prothiophos	0.5	nd	nd	nd		
Stirophos	0.5	nd	nd	nd		
Ethion	0.5	nd	nd	nd		
Bolstar	0.5	nd	nd	nd		
Fensulfothion	0.5	nd	nd	nd		
Azinphos methyl	0.5	nd	nd	nd		
Coumaphos	0.5	nd	nd	nd		
2-Nitro-m-xylene-SURROGATE	1	81%	79%	84%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/3 COC23789-90
Project : E12723/3 - AREA-D

Analyte	Lab No	E148292	E148293	E148294		
		WB1	TB1	TS1		
	Sample Id	12.10.04	12.10.04	12.10.04		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	--	--		
0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	--	--		
C15-C28 Fraction	100	nd	--	--		
C29-C36 Fraction	100	nd	--	--		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	9.0		
Toluene	1	nd	nd	9		
Ethylbenzene	1	nd	nd	8		
m&p-Xylene	2	nd	nd	16		
o-Xylene	1	nd	nd	8		
4-Bromofluorobenzene-SURROGATE	1	89%	72%	87%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3 COC23789-90

Project : E12723/3 - AREA-D

Analyte	Lab No / Sample Id / PQL	E148292 WB1 12.10.04				
E4870 Dissolved Metals in Waters						
Analysed by NATA Accreditation 1645						
Lead	0.001	nd				
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 4E1903A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/3 COC23789-90

Project : E12723/3 - AREA-D

Analyte	Lab No	E148292				
		WB1				
	Sample Id	12.10.04				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chryene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	73%				
Anthracene-D10-SURROGATE	1	82%				
p-Terphenyl-D14-SURROGATE	1	81%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

Amdel Ltd
ABN 30 008 127 802

35-37 Stirling Street Thebarton SA 5031
PO Box 338, Torrensville Plaza SA 5031
Phone: (08) 8416 5267 Facsimile: (08) 8234 0321

ASBESTOS IDENTIFICATION REPORT

CLIENT: Coffey

DATE: 27 October 2004

ADDRESS: NSW

AMDEL JOB NO: 4AD2846

PROJECT NO: E12723/3

AMDEL ENVIRO REF: 4E1903A

PROJECT NAME: Area-D

PAGE NO: 1 of 1

NATA ACCREDITATION NO: 1526

SCOPE OF ACCREDITATION: Class 7.82.31: Qualitative identification of asbestos types in bulk samples by polarized light microscopy.

RESULTS:

Sample: HA14 0.0-0.1 Lab ID: E148277
Sample size (e): 70g
Description: The sample is white sand-sized particles and brown vegetation fragments
Result: No asbestos was detected by polarized light microscopy

Sample: HA16 0.0-0.1 Lab ID: E148281
Sample size (e): 62g
Description: The sample is white and dark grey sand- and gravel-sized particles and brown vegetation fragments
Result: No asbestos was detected by polarized light microscopy

Sample: DUP-1 Lab ID: E148296
Sample size (e): 62g
Description: The sample is white and dark grey sand- and gravel-sized particles and brown vegetation fragments
Result: No asbestos was detected by polarized light microscopy

APPROVED IDENTIFIER: Michael Till APPROVED SIGNATORY: M. J. Till

The approximate dimensions (in mm) stated above refer to the size of (a) a single piece (b) largest of several particles (c) largest of many particles (d) volume in ml of unconsolidated particles (e) weight in grams of unconsolidated particles

The results contained in this report relate only to the sample(s) submitted for testing. Amdel Laboratories Ltd accepts no responsibilities for the representivity of the sample(s) submitted.

This laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

Chain of Custody

No: 23788

Coffey

Laboratory Quotation / Order No:

Job No: EW12513 Sheet 1 of 3

Dispatch to: (Address & Phone No.) AMDEL LIMITED

Sampled by: AD

Consigning Officer:

Date Dispatched: 13/10/04

Attention: JULIE EDMOND

Project Manager: (report results to) ANDREW BARNICK

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DEZAC	13/10/04	5.20		13/10/04	5.20

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	VOC	OCP	Asbestos	Sample Condition on Receipt
EM18251	SOIL	GLASS JAR + ICE	HA1 0.0-0.1	12/10/04	✓	✓	✓	✓		✓	✓	
2			0.4-0.5									
3			HA2 0.0-0.1		✓	✓	✓	✓				
4			0.4-0.5									
5			HA3 0.0-0.1									
6			0.4-0.5		✓	✓	✓	✓				
7			HA4 0.0-0.1		✓	✓	✓	✓		✓	✓	
8			0.4-0.5									
9			HA5 0.0-0.1		✓	✓	✓	✓				
60			0.4-0.5									
1			HA6 0.0-0.1		✓	✓	✓	✓				
2			0.4-0.5									
3			HA7 0.0-0.1		✓	✓	✓	✓				
4			0.4-0.5									
5			HA8 0.0-0.1									
6			0.4-0.5		✓	✓	✓	✓				
7			HA9 0.0-0.1		✓	✓	✓	✓		✓	✓	

4E 1903

13 OCT 2004

4E 19038

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: STD 5 DAYS PLEASE

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

2005/11-01

Chain of Custody

No: 23789

Coffey

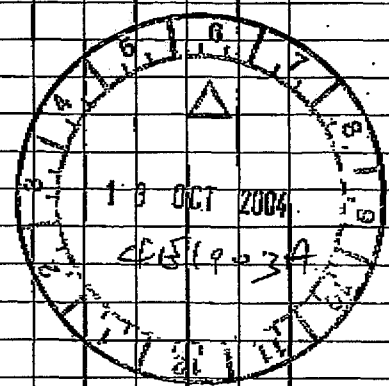
Dispatch to: (Address & Phone No.): ANDEL LIMITED	Laboratory Quotation / Order No:	Job No: EJ723	Sheet: 2 of 3
	Sampled by: AD	Consigning Officer:	
		Date Dispatched:	
Attention: JULIE EDMONDS	Project Manager (report results to): ANDREW BARWICK	Courier Service:	
		Consignment Note No:	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	13/10/04	5:20		13/10/04	5:20

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals	VOC	OCP	Asbestos	OPP	Sample Condition on Receipt
EW8268	SOIL	GLASSJAR ICE	HA9 0.0-0.5	12/10/04									
9			HA10 0.0-0.1		/	/	/	/					
70			0.4-0.5							/			
1			HA11 0.0-0.1		/	/	/	/					
2			0.4-0.5										
3			HA12 0.0-0.1		/	/	/	/		/	/		
4			0.4-0.5										
5			HA13 0.0-0.1										
6			0.4-0.5		/	/	/	/					
7			HA14 0.0-0.1		/	/	/	/	/	/	/	/	
8			0.4-0.5										
9			HA15 0.0-0.1										
80			0.4-0.5		/	/	/	/					
1			HA16 0.0-0.1		/	/	/	/	/	/	/	/	
2			0.4-0.5										
3			HA17 0.0-0.1		/	/	/	/					
4			0.4-0.5										

4E1903

4E1903A



Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

2005/H1-01

Chain of Custody

No. 23790

Coffey

Laboratory Quotation / Order No: | Job No: E17253 | Sheet 3 of 3

Dispatch to: (Address & Phone No.): AMDEL LIMITED

Sampled by: KD

Consigning Officer:

Date Dispatched: 13/10/04

Attention: JULIE EDWARDS

Project Manager: (report results to) ANDREW BARNICLE

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
KAREN DEVAL	13/10/04	5:20	[illegible]	13/10/04	5:20

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals 8	VOC	OCP	Asbestos	OPP	Sample Condition on Receipt
E148285	SOIL	GLASS JAR + ICE	HA18 0.0-0.1	12/10/04	✓	✓	✓	✓					
6			0.2-0.3										
7			HA19 0.0-0.1										
8			0.4-0.5		✓	✓	✓	✓					
9			HA20 0.0-0.1		✓	✓	✓	✓					
90			HA21 0.0-0.1		✓	✓	✓	✓					
1			0.2-0.3										
	WATER	500mL AMBER											
2		Metals bottle	WB1		✓	✓	✓	✓					
		2x 40mL Vials											
3		1x 40mL Vial	TB1				✓						
4		1x 40mL Vial	TS1				✓						
* 4E1903 5	SOIL	GLASS JAR + ICE	4E1903 DUP 1		✓	✓	✓	✓	✓	✓	✓	✓	
6			2										
7			3										
8			4										

4E1903A

13 OCT 2004

4E1903A

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

2053/11-01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 4E1903A

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 4E1903A

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 4E1903A

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E148277,E148298)							
C6-C9 Fraction	100	130		130%			
E1221 TPH in Soil (E148277,E148298)							
C10-C14 Fraction							
C15-C28 Fraction	550	540		97%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E148277,E148298)							
Benzene	10	11		105%			
Toluene	10	10		103%			
Ethylbenzene	10	10		104%			
m&p-Xylene	20	21		106%			
o-Xylene	10	11		108%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	97			97%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	600			108%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	11			106%		
Toluene	10	11			109%		
Ethylbenzene	10	11			106%		
m&p-Xylene	20	22			111%		
o-Xylene	10	11			108%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

Job Number : 4E1903A

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E148277)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E148277)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E148277)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Lead	50	48			96%		
Arsenic	50	47			94%		
Cadmium	50	48			97%		
Chromium	50	50			100%		
Copper	50	47			95%		
Nickel	50	51			103%		
Zinc	50	49			98%		
E5950 Mercury in Soil							
Mercury	0.50	0.41			82%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Lead	5	nd				
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	5.2			105%		
Acenaphthylene	5	5.4			106%		
Acenaphthene	5	5.4			107%		
Fluorene	5	5.4			108%		
Phenanthrene	5	5.4			107%		
Anthracene	5	5.2			105%		
Fluoranthene	5	5.2			103%		
Pyrene	5	5.2			102%		
Benz(a)anthracene	5	5.0			100%		
Chrysene	5	5.4			107%		
Benzo(b) & (k)fluoranthene	10	11			106%		
Benzo(a)pyrene	5	5.2			106%		
Indeno(1.2.3-cd)pyrene	5	5.2			103%		
Dibenz(a.h)anthracene	5	5.2			105%		
Benzo(g.h.i)perylene	5	5.2			106%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	8.4			84%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	8			84%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			87%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8			80%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	7			72%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.4			86%		
a-BHC	0.5	0.4			84%		
g-BHC	0.5	0.4			86%		
Heptachlor	0.5	0.5			96%		
Aldrin	0.5	0.4			86%		
b-BHC	0.5	0.4			88%		
d-BHC	0.5	0.4			86%		
Oxychlordane	0.5	0.5			92%		
Heptachlor epoxide	0.5	0.5			90%		
Endosulfan 1	0.5	0.4			88%		
Chlordane-Trans	0.5	0.5			90%		
Chlordane-Cis	0.5	0.4			88%		
trans-Nonachlor	0.5	0.5			94%		
DDE	1	0.9			89%		
Dieldrin	0.5	0.5			90%		
Endrin	0.5	0.5			104%		
DDD	1	0.9			85%		
Endosulfan 2	0.5	0.5			94%		
DDT	1	1.4			130%		
Endosulfan sulfate	0.5	0.5			100%		
Methoxychlor	0.5	0.6			116%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	3.6			71%		
Mevinphos	5	4.4			88%		
Propetamphos	5	4.2			85%		
Phorate	5	4.2			86%		
Demeton-s-methyl	5	4.4			87%		
Diazinon	5	4.2			84%		
Disulfoton	5	4.4			87%		
Ronnel	5	4.2			84%		
Chlorpyrifos methyl	5	4.4			87%		
Chlorpyrifos	5	4.2			83%		
Parathion methyl	5	3.6			73%		
Fenthion	5	4.4			88%		
Malathion	5	4.4			90%		
Fenitrothion	5	4.2			86%		
Prothiophos	5	4.4			88%		
Carbophos	5	4.2			85%		
Ethion	5	4.2			85%		
Bolstar	5	4.2			84%		
Fensulfothion	5	4.0			80%		
Azinphos methyl	5	4.0			82%		
Coumaphos	5	4.0			81%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
[illegible]prop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
[illegible]phos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	180			90%		
E0221 TPH in Water (ug/L)							
C10-C14 Fraction		--					
C15-C28 Fraction	5500	3980			72%		
C29-C36 Fraction		--					
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	10			101%		
Toluene	10	11			106%		
Ethylbenzene	10	10			104%		
m&p-Xylene	20	22			108%		
o-Xylene	10	11			106%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd				
C15-C28 Fraction	100	nd				
C29-C36 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E4870 Dissolved Metals in Waters (E148277)							
Analysed by NATA Accreditation 1645							
Lead	0.100	0.094		94%			
Arsenic	0.100	0.096		96%			
Cadmium	0.1000	0.10		102%			
Chromium	0.100	0.095		95%			
Copper	0.100	0.098		98%			
Nickel	0.100	0.096		96%			
Zinc	0.100	0.097		97%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.011			110%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			80%		
Acenaphthylene	10	8			84%		
Acenaphthene	10	8			78%		
Fluorene	10	8			83%		
Phenanthrene	10	9			91%		
Anthracene	10	8			83%		
Fluoranthene	10	9			88%		
Pyrene	10	9			88%		
Benz(a)anthracene	10	8			84%		
Chryene	10	9			91%		
Benzo(b) & (k)fluoranthene	20	17			87%		
Benzo(a)pyrene	10	7			74%		
Indeno(1.2.3-cd)pyrene	10	8			83%		
Dibenz(a.h)anthracene	10	7			72%		
Benzo(g.h.i)perylene	10	8			77%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 4E1903A

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chryene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

HAND AUGERS
AREA - D

ATTN: Mr Andrew Barwick

FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 15/10/04

PAGES: 1 of 5

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3 COC#23788
Project:	E12723/3 - AREA-D
Our Reference Number :	4E1903A
Date Received by Amdel :	15/10/04

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
#Moisture (%w/w)	E7500	9	
TPH C6-C9 by Purge & Trap	E1230	9	___ 1 Working Day
TPH (C10-C36)	E1221	9	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	9	___ 2 Working Days
Metals by ICP-AES	E5910	9	
Mercury in Soil	E5950	9	✓ 5 Working Days
Polycyclic Aromatic Hydrocarbons	E1110	9	
Volatile Organic Compounds	E1290	3	___ Working Days
Organochlorine Pesticides	E1080	3	
Asbestos	OCC11	3	
Organophosphorus Pesticides	E1090	3	
Samples on Hold (Soil)	E7600	9	
TPH C6-C9 by purge & trap	E0230	1	
TPH (C10-C36)	E0221	1	

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(Yes) / No / N/A
* Samples received in good condition and appropriately preserved for all tests.	(Yes) / No / N/A
* VOC/SVOC samples were received in teflon lined lids.	(Yes) / No / N/A
* VOC samples were received with Zero Headspace.	(Yes) / No / N/A
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	(Yes) / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 331 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 15/10/04 PAGES: 1 of 5

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/3 COC#23788
Project:	E12723/3 - AREA-D
Our Reference Number :	4E1903A
Date Received by Amdel :	15/10/04

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Benzene, Toluene, Ethylbenzene & Xylene	E0010	3	
Dissolved Metals by ICP-MS	E4870	1	___ 1 Working Day
Mercury	E4850	1	
Polycyclic Aromatic Hydrocarbons	E0110	1	___ 2 Working Days
Australian GST	GST		
			✓ 5 Working Days
			___ Working Days

21
* PLEASE NOTE - HA 0-2-0.3 on COC - JAR DEPTH 0.1-0.2 - WILL ID AS PER JAR, PLEASE ADVISE IF INCORRECT. CORRECT ✓

* PLEASE NOTE THIS JOB IS NOW SPLINT INTO AREA A & AREA D

RECMOS ANGELA KARLSCH.

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(Yes) / No / N/A
*	Samples received in good condition and appropriately preserved for all tests.	(Yes) / No / N/A
*	VOC/SVOC samples were received in teflon lined lids.	(Yes) / No / N/A
*	VOC samples were received with Zero Headspace.	(Yes) / No / N/A
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	(Yes) / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51528
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	0
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	01/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	10/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	5
PROJECT:	COC# 27269		

COMMENTS

Samples as received digested by USEPA method 200.2 (modified) prior to the determination of metals. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil Senior Inorganic Chemist
Marc Centner Technical Manager
Peter Dickenson Senior Inorganic Chemist
Daniel Um Senior Organic Chemist

Reports signed by signatories as required

Batch: ES51528
Sub Batch: 0
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1	2	3	4	5					
		Date Sampled											
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP2	DUP5	DUP6	DUP8	DUP10					
EA-055	Moisture Content (dried @ 103'C)	%	0.1	5.4	15.1	10.6	7.3	7.0					
EG-005T	Arsenic - Total	mg/kg	1	2	2	1	1	<1					
EG-005T	Cadmium - Total	mg/kg	1	<1	<1	<1	<1	<1					
EG-005T	Chromium - Total	mg/kg	1	4	5	1	15	<1					
EG-005T	Copper - Total	mg/kg	1	4	22	3	14	<1					
EG-005T	Nickel - Total	mg/kg	1	7	7	<1	16	<1					
EG-005T	Lead - Total	mg/kg	1	11	26	9	23	6					
EG-005T	Zinc - Total	mg/kg	1	15	46	52	66	19					
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	0.5	<0.1	<0.1	<0.1					

Batch: ES51528
Sub Batch: 0
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
	Laboratory I.D.			200	201	202							
	Date Sampled			01/11/2004	01/11/2004	01/11/2004							
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	LCS	MS							
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----							
EG-005T	Arsenic - Total	mg/kg	1	<1	99.0%	85.0%							
EG-005T	Cadmium - Total	mg/kg	1	<1	83.0%	94.0%							
EG-005T	Chromium - Total	mg/kg	1	<1	97.0%	78.0%							
EG-005T	Copper - Total	mg/kg	1	<1	95.0%	90.0%							
EG-005T	Nickel - Total	mg/kg	1	<1	97.0%	74.0%							
EG-005T	Lead - Total	mg/kg	1	<1	92.0%	81.0%							
EG-005T	Zinc - Total	mg/kg	1	<1	99.0%	90.0%							
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	106%	108%							

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51528
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	1
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	01/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	10/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	1
PROJECT:	COC# 27269		

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil
Senior Inorganic Chemist

Marc Centner
Technical Manager

Peter Dickenson
Senior Inorganic Chemist

Daniel Um
Senior Organic Chemist

Reports signed by signatories as required

Batch: ES51528
Sub Batch: 1
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		5									
		Date Sampled											
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP10									
EA-055	Moisture Content (dried @ 103°C)	%	0.1	7.0									
EP-068A-SS	**ORGANOCHLORINE PESTICIDES**												
EP-068A-SS	alpha-BHC	mg/kg	0.05	<0.05									
EP-068A-SS	HCB	mg/kg	0.05	<0.05									
EP-068A-SS	beta-BHC & gamma-BHC	mg/kg	0.1	<0.1									
EP-068A-SS	delta-BHC	mg/kg	0.05	<0.05									
EP-068A-SS	Heptachlor	mg/kg	0.05	<0.05									
EP-068A-SS	Aldrin	mg/kg	0.05	<0.05									
EP-068A-SS	Heptachlor epoxide	mg/kg	0.05	<0.05									
EP-068A-SS	Chlordane - trans	mg/kg	0.05	<0.05									
EP-068A-SS	Endosulfan 1	mg/kg	0.05	<0.05									
EP-068A-SS	Chlordane - cis	mg/kg	0.05	<0.05									
EP-068A-SS	Dieldrin	mg/kg	0.05	<0.05									
EP-068A-SS	DDE	mg/kg	0.05	<0.05									
EP-068A-SS	Endrin	mg/kg	0.05	<0.05									
EP-068A-SS	Endosulfan 2	mg/kg	0.05	<0.05									
EP-068A-SS	DDD	mg/kg	0.05	<0.05									
EP-068A-SS	Endrin aldehyde	mg/kg	0.05	<0.05									
EP-068A-SS	Endosulfan sulfate	mg/kg	0.05	<0.05									
EP-068A-SS	DDT	mg/kg	0.2	<0.2									
EP-068A-SS	Endrin ketone	mg/kg	0.05	<0.05									
EP-068A-SS	Methoxychlor	mg/kg	0.2	<0.2									
EP-068S-SS	**ORGANOCHLORINE PESTICIDE SURROGATE**												
EP-068S-SS	Dibromo-DDE	%	1	77									

Batch: ES51528
Sub Batch: 1
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		100	101	102	103	104					
		Date Sampled		01/11/2004	01/11/2004	01/11/2004	01/11/2004	01/11/2004					
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NOCOPS1869 SCS	NOCOPS1869 DCS	NOCOPS1869 MS	NOCOPS1869 MSD					
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----					
EP-068A-SS	**ORGANOCHLORINE PESTICIDES**												
EP-068A-SS	alpha-BHC	mg/kg	0.05	<0.05	95.4%	102%	----	----					
EP-068A-SS	HCB	mg/kg	0.05	<0.05	92.8%	98.6%	----	----					
EP-068A-SS	beta-BHC & gamma-BHC	mg/kg	0.1	<0.1	96.2%	102%	97.3%	90.2%					
EP-068A-SS	delta-BHC	mg/kg	0.05	<0.05	93.0%	98.3%	----	----					
EP-068A-SS	Heptachlor	mg/kg	0.05	<0.05	96.2%	106%	82.3%	68.3%					
EP-068A-SS	Aldrin	mg/kg	0.05	<0.05	95.7%	102%	97.2%	97.1%					
EP-068A-SS	Heptachlor epoxide	mg/kg	0.05	<0.05	94.7%	100%	----	----					
EP-068A-SS	Chlordane - trans	mg/kg	0.05	<0.05	100%	107%	----	----					
EP-068A-SS	Endosulfan 1	mg/kg	0.05	<0.05	97.9%	101%	----	----					
EP-068A-SS	Chlordane - cis	mg/kg	0.05	<0.05	98.7%	103%	----	----					
EP-068A-SS	Dieldrin	mg/kg	0.05	<0.05	98.0%	102%	99.8%	98.7%					
EP-068A-SS	DDE	mg/kg	0.05	<0.05	94.6%	99.3%	----	----					
EP-068A-SS	Endrin	mg/kg	0.05	<0.05	101%	106%	105%	87.7%					
EP-068A-SS	Endosulfan 2	mg/kg	0.05	<0.05	97.4%	97.9%	----	----					
EP-068A-SS	DDD	mg/kg	0.05	<0.05	92.0%	96.4%	----	----					
EP-068A-SS	Endrin aldehyde	mg/kg	0.05	<0.05	97.7%	94.5%	----	----					
EP-068A-SS	Endosulfan sulfate	mg/kg	0.05	<0.05	94.2%	97.6%	----	----					
EP-068A-SS	DDT	mg/kg	0.2	<0.2	98.6%	107%	78.4%	81.8%					
EP-068A-SS	Endrin ketone	mg/kg	0.05	<0.05	89.1%	92.1%	----	----					
EP-068A-SS	Methoxychlor	mg/kg	0.2	<0.2	97.9%	108%	----	----					
EP-068S-SS	**ORGANOCHLORINE PESTICIDE SURROGATE**												
EP-068S-SS	Dibromo-DDE	%	1	81	92	97	119	118					

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51528
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	2
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	01/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	10/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	5
PROJECT:	COC# 27269		

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil Senior Inorganic Chemist
Marc Centner Technical Manager
Peter Dickenson Senior Inorganic Chemist
Daniel Um Senior Organic Chemist
Reports signed by signatories as required

Batch: ES51528
Sub Batch: 2
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1	2	3	4	5					
		Date Sampled											
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP2	DUP5	DUP6	DUP8	DUP10					
EA-055	Moisture Content (dried @ 103'C)	%	0.1	5.4	15.1	10.6	7.3	7.0					
EP-071-SS	**TOTAL PETROLEUM HYDROCARBONS**												
EP-071-SS	C6 - C9 Fraction	mg/kg	2	<2	<2	<2	<2	<2					
EP-071-SS	C10 - C14 Fraction	mg/kg	50	<50	<50	<50	<50	<50					
EP-071-SS	C15 - C28 Fraction	mg/kg	100	<100	<100	<100	<100	<100					
EP-071-SS	C29 - C36 Fraction	mg/kg	100	<100	<100	<100	<100	<100					
EP-080-SS	**BTEX**												
EP-080-SS	Benzene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080-SS	Toluene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080-SS	Chlorobenzene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080-SS	Ethylbenzene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080-SS	meta- & para-Xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080-SS	ortho-Xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2					
EP-080S-SS	**VOLATILE TPH/BTEX COMPOUND SURROGATES**												
EP-080S-SS	1.2-Dichloroethane-D4	%	1	113	90	108	107	97					
EP-080S-SS	Toluene-D8	%	1	114	92	111	116	101					
EP-080S-SS	4-Bromofluorobenzene	%	1	114	91	114	111	101					

Batch: ES51528
Sub Batch: 2
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		200	201	202	203	204					
		Date Sampled		01/11/2004	01/11/2004	01/11/2004	01/11/2004	01/11/2004					
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NTPHT5575 SCS	NTPHT5575 DCS	NTPHT5575 MS	NTPHT5575 MSD					
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----					
EP-071-SS	**TOTAL PETROLEUM HYDROCARBONS**												
EP-071-SS	C6 - C9 Fraction	mg/kg	2	<2	98.9%	98.4%	99.3%	99.0%					
EP-071-SS	C10 - C14 Fraction	mg/kg	50	<50	92.0%	94.0%	87.9%	93.6%					
EP-071-SS	C15 - C28 Fraction	mg/kg	100	<100	94.0%	92.0%	96.5%	99.4%					
EP-071-SS	C29 - C36 Fraction	mg/kg	100	<100	83.0%	89.0%	102%	99.8%					
EP-080-SS	**BTEX**												
EP-080-SS	Benzene	mg/kg	0.2	<0.2	107%	94.3%	102%	103%					
EP-080-SS	Toluene	mg/kg	0.2	<0.2	102%	108%	102%	100%					
EP-080-SS	Chlorobenzene	mg/kg	0.2	<0.2	111%	103%	105%	104%					
EP-080-SS	Ethylbenzene	mg/kg	0.2	<0.2	104%	99.3%	107%	106%					
EP-080-SS	meta- & para-Xylene	mg/kg	0.2	<0.2	103%	95.9%	98.0%	103%					
EP-080-SS	ortho-Xylene	mg/kg	0.2	<0.2	112%	103%	102%	106%					
EP-080S-SS	**VOLATILE TPH/BTEX COMPOUND SURROGATES**												
EP-080S-SS	1.2-Dichloroethane-D4	%	1	100	104	109	99	114					
EP-080S-SS	Toluene-D8	%	1	100	100	97	108	117					
EP-080S-SS	4-Bromofluorobenzene	%	1	98	100	106	108	99					

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51528
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	3
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	01/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	10/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	5
PROJECT:	COC# 27269		

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil Senior Inorganic Chemist
Marc Centner Technical Manager
Peter Dickenson Senior Inorganic Chemist
Daniel Um Senior Organic Chemist

Reports signed by signatories as required

Batch: ES51528
Sub Batch: 3
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1	2	3	4	5					
		Date Sampled											
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP2	DUP5	DUP6	DUP8	DUP10					
EA-055	Moisture Content (dried @ 103'C)	%	0.1	5.4	15.1	10.6	7.3	7.0					
EP-075B-SA	**POLYNUCLEAR AROMATIC HYDROCARBONS (SIM)**												
EP-075B-SA	Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Fluorene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Phenanthrene	mg/kg	0.5	<0.5	<0.5	<0.5	0.5	<0.5					
EP-075B-SA	Anthracene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Fluoranthene	mg/kg	0.5	<0.5	1.1	<0.5	<0.5	<0.5					
EP-075B-SA	Pyrene	mg/kg	0.5	<0.5	1.3	<0.5	<0.5	<0.5					
EP-075B-SA	Benzo(a)anthracene	mg/kg	0.5	<0.5	0.7	<0.5	<0.5	<0.5					
EP-075B-SA	Chrysene	mg/kg	0.5	<0.5	0.7	<0.5	<0.5	<0.5					
EP-075B-SA	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	0.9	<0.5	<0.5	<0.5					
EP-075B-SA	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Benzo(a)pyrene	mg/kg	0.5	<0.5	0.8	<0.5	<0.5	<0.5					
EP-075B-SA	Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Dibenzo(a.h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
EP-075B-SA	Benzo(g.h.I)perylene	mg/kg	0.5	<0.5	0.6	<0.5	<0.5	<0.5					
EP-075T-AS	**PAH SURROGATES (SIM)**												
EP-075T-AS	2-Fluorobiphenyl	%	1	76	75	79	78	77					
EP-075T-AS	Anthracene-d10	%	1	81	80	83	77	77					
EP-075T-AS	4-Terphenyl-d14	%	1	91	85	86	85	84					

Batch: ES51528
Sub Batch: 3
Date of Issue: 11/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference: COC# 27269

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION										
		Laboratory I.D.		100	101	102	103	104						
		Date Sampled		01/11/2004	01/11/2004	01/11/2004	01/11/2004	01/11/2004						
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NEP075S720 SCS	NEP075S720 DCS	NEP075S720 MS	NEP075S720 MSD						
				CHECKS AND SPIKES										
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----						
EP-075B-SA	**POLYNUCLEAR AROMATIC HYDROCARBONS (SIM)**													
EP-075B-SA	Naphthalene	mg/kg	0.5	<0.5	97.0%	102%	----	----						
EP-075B-SA	Acenaphthylene	mg/kg	0.5	<0.5	102%	97.4%	----	----						
EP-075B-SA	Acenaphthene	mg/kg	0.5	<0.5	98.4%	97.4%	97.8%	92.6%						
EP-075B-SA	Fluorene	mg/kg	0.5	<0.5	101%	97.4%	----	----						
EP-075B-SA	Phenanthrene	mg/kg	0.5	<0.5	90.0%	89.3%	----	----						
EP-075B-SA	Anthracene	mg/kg	0.5	<0.5	93.8%	96.8%	----	----						
EP-075B-SA	Fluoranthene	mg/kg	0.5	<0.5	96.3%	97.7%	----	----						
EP-075B-SA	Pyrene	mg/kg	0.5	<0.5	93.0%	97.6%	103%	104%						
EP-075B-SA	Benzo(a)anthracene	mg/kg	0.5	<0.5	102%	95.7%	----	----						
EP-075B-SA	Chrysene	mg/kg	0.5	<0.5	99.0%	97.0%	----	----						
EP-075B-SA	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	97.0%	94.8%	----	----						
EP-075B-SA	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	98.3%	96.6%	----	----						
EP-075B-SA	Benzo(a)pyrene	mg/kg	0.5	<0.5	98.7%	99.8%	----	----						
EP-075B-SA	Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	98.3%	95.2%	----	----						
EP-075B-SA	Dibenzo(a.h)anthracene	mg/kg	0.5	<0.5	96.8%	93.2%	----	----						
EP-075B-SA	Benzo(g.h.I)perylene	mg/kg	0.5	<0.5	101%	99.2%	----	----						
EP-075T-AS	**PAH SURROGATES (SIM)**													
EP-075T-AS	2-Fluorobiphenyl	%	1	94	107	102	103	94						
EP-075T-AS	Anthracene-d10	%	1	91	102	100	101	92						
EP-075T-AS	4-Terphenyl-d14	%	1	92	102	97	99	84						

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET4814/ 6936 / 1 - 1
Your ref :ES51528
NATA Accreditation No: 14484

4 November 2004

Australian Laboratory Services Pty Ltd,
277,Woodpark Road
Smithfield,
NSW 2164.

Fax No:02-87848500
Attn:MR Greg Vogal,

Dear Greg,

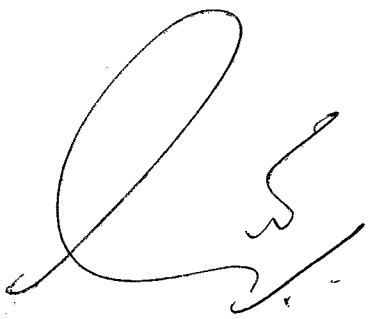
This report presents the results of one sample, forwarded by Australian Laboratory Services Pty Ltd, on 4 November 2004, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy inconjunction with dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET4814 / 6936 / 1. ES51528 - #1 - DUP 10.**
Approx dimensions 20.0 cm x 2.0 cm x 1.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Analysed and reported by,



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

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced except in full.

No: 27269

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723|3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS 277 Woodpark Rd Smithfield	Sampled by: T. Delac	Consigning Office: / Date Dispatched:
Attention:	Project Manager: (report results to) Andrew Barwick	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Barwick	1/11/04		Morgan (custom mustard) 51		

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX (~~Phenols~~)	Metals: Pb	VOC	8	OP	Asbestos	Sample Condition on Receipt
	Soil	JAR + ICE	DUP 2 (1)		/	/	/	/					
			DUP 5 (2)		/	/	/	/					
			DUP 6 (3)		/	/	/	/					
			DUP 8 (4)		/	/	/	/					
			DUP 10 (5)		/	/	/	/		/		/	

Batch No.: ☐ CRG ES15128

Batched date: 6/1/04

☐ Soil ☐ Ambient

☐ Water ☐ Chilled

☐ Other °C

☐ Subcontract Work

☐ Bottle Return

☐ Imm. Anal. Actioned

CONTRACT WORK

~~SACTO~~ ASET

Asbestos

1 x soil | bags

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

Received by: ALS 1/11/04, 4.00pm.

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

ALS Environmental

ORGANICS QUALITY CONTROL REPORT

BATCH NO: ES51528

DATE BATCH RECEIVED: 1/11/2004

CLIENT: Coffey Geosciences Pty Ltd

DATE BATCH COMPLETED: 11/11/2004

PROJECT: e12723/3

Method Code	Test	Matrix	Method Reference		QC Lot Number	Date Samples Extracted	Date Samples Analysed
			Extraction	Analysis			
EP-068	Pesticides	Soil	Tumbler	USEPA 8270B	NOCOPS1869	05/11/04	07/11/04
EP-071	TPH(SV)	Soil	Tumbler	USEPA 8015A	NTPHT5575	05/11/04	08/11/04
EP-071/80	TPH(V)/BTEX	Soil	USEPA 5030A	USEPA 8260B	NVOCS5575	04/11/04	05/11/04
EP-075SA	PAH/Phenols	Soil	Tumbler	USEPA 8270C	NEP075S-720	05/11/04	09/11/04

All analysis and laboratory QC pertaining to Environmental Site Assessments and Remedition have been conducted in accordance with Schedule (B3) NEPM Guidline on Laboratory Analysis of Potentially Contaminated Soil (December 1999). Please refer to Certificate of analysis for any exceptions to this clause.
Where applicable, internal standards are added to sample extracts prior to instrumental analysis. Absolute peak areas and retention times fall within the criteria specified in the individual methods. Continuing Calibration (CC) standards are run at the frequency of 1 in every 20 samples.

Abbreviations: SV = semivolatile, V = volatile

*: In-house methods

A Campbell Brothers Limited Company

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869 ANALYST A.K

MATRIX: Soils

COMPOUND	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
	mg/kg	mg/kg	%		%	%	Low	High	%
EP068A : OC Pesticides									
a-BHC	<0.025	0.25	95.4	102	98.7	6.69	77.5	109	0 - 20
HCB	<0.025	0.25	92.8	98.6	95.7	6.06	69.6	108	0 - 20
b- & g-BHC	<0.05	0.5	96.2	102	99.1	5.85	73.1	110	0 - 20
d-BHC	<0.025	0.25	93	98.3	95.7	5.54	67.1	113	0 - 20
Heptachlor	<0.025	0.25	96.2	106	101	9.69	74.8	107	0 - 20
Aldrin	<0.025	0.25	95.7	102	98.9	6.37	73.3	108	0 - 20
Heptachlor epoxide	<0.025	0.25	94.7	100	97.4	5.44	74	108	0 - 20
Chlordane peak no 1	<0.025	0.25	100	107	104	6.76	74.6	108	0 - 20
Endosulfan 1	<0.025	0.25	97.9	101	99.5	3.12	71.5	112	0 - 20
Chlordane peak no. 2	<0.025	0.25	98.7	103	101	4.26	70.8	111	0 - 20
Dieldrin	<0.025	0.25	98	102	100	4	72.7	109	0 - 20
DDE	<0.025	0.25	94.6	99.3	97	4.85	73.6	107	0 - 20
Endrin	<0.025	0.25	101	106	104	4.83	65.8	107	0 - 20
Endosulfan 2	<0.025	0.25	97.4	97.9	97.7	0.51	73.8	112	0 - 20
DDD	<0.025	0.25	92	96.4	94.2	4.67	72.4	109	0 - 20
Endrin aldehyde	<0.025	0.25	97.7	94.5	96.1	3.33	72.2	114	1 - 20
Endosulfan sulfate	<0.025	0.25	94.2	97.6	95.9	3.55	68.5	115	0 - 20
DDT	<0.1	0.25	98.6	107	103	8.17	62.1	125	0 - 20
Endrin ketone	<0.025	0.25	89.1	92.1	90.6	3.31	71.1	114	0 - 20
Methoxychlor	<0.1	0.25	97.9	108	103	9.81	56.8	137	0 - 20
EP068B : OP Pesticides									
Dichlorvos	<0.025	0.25	91	98.4	94.7	7.81	64	117	0 - 20
Demeton-s-methyl	<0.025	0.25	93.5	89.1	91.3	4.82	57.7	123	0 - 20
Monocroptophos	<0.1	0.25	87.6	100	93.8	13.2	46.9	125	0 - 20
Dimethoate	<0.025	0.25	96.2	87.5	91.9	9.47	60.7	117	0 - 20
Diazinon	<0.025	0.25	94.9	98.6	96.8	3.82	72.9	108	0 - 20
Chlorpyrifos methyl	<0.025	0.25	91.1	96.7	93.9	5.96	72.2	107	0 - 20
Parathion methyl	<0.1	0.25	93.6	97.3	95.5	3.88	68	109	0 - 20
Malathion	<0.025	0.25	92.1	96	94.1	4.15	61.6	121	0 - 20
Fenthion	<0.025	0.25	88.8	95.3	92.1	7.06	72.5	107	0 - 20
Chlorpyrifos	<0.025	0.25	94.6	100	97.3	5.55	75	109	0 - 20
Parathion	<0.1	0.25	86.3	90.5	88.4	4.75	65.2	116	0 - 20
Pirimphos ethyl	<0.025	0.25	86.7	94.4	90.6	8.5	66.3	118	0 - 20
Chlorfenvinphos Z	<0.025	0.25	93.2	98.1	95.7	5.12	54.5	132	0 - 20
Bromophos ethyl	<0.025	0.25	93.3	98.8	96.1	5.73	66.5	112	0 - 20
Fenamiphos	<0.025	0.25	78.4	84.5	81.5	7.49	48.8	118	0 - 20
Prothiofos	<0.025	0.25	91.4	96.8	94.1	5.74	73	111	0 - 20
Ethion	<0.025	0.25	85.9	81.3	83.6	5.5	58.9	116	0 - 20
Carbofenthion	<0.025	0.25	84.1	93.9	89	11	67.8	108	0 - 20
Azinphos methyl	<0.025	0.25	72.8	87.9	80.4	18.8	33.1	144	0 - 20

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869 ANALYST A.K

MATRIX: Soils

COMPOUND	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
	mg/kg	mg/kg	%		%	%	Low	High	%
EP068C : Triazines									
Simazine	<0.025	0.25	84	87.7	85.9	4.31	54.8	121	0 - 20
Atrazine	<0.025	0.25	86.2	91.7	89	6.18	65.2	115	0 - 20
EP068D : Pyrethroids									
Cypermethrins(multipeaks)	<0.1	0.25	88.3	86.1	87.2	2.52	66.9	119	0 - 20
EP068S : OC Surrogate									
Dibromo-DDE	80.9%	0.5	92.2	96.7	94.5	4.76	69.4	117	0 - 20
EP068T : OP Surrogate									
DEF	79.4%	0.5	98.4	101	99.7	2.61	69.2	119	0 - 20

COMMENTS:

1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)

2) The control limits on RPD (relative percent deviation) are fixed.

3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869
MATRIX : Soils
ANALYST: A.K

COMPOUND	LOR	QC DUPLICATE RESULTS			
		ES51269	ES51269	RPD	Cont. Limit
		4	4D		
	mg/kg	mg/kg	mg/kg	%	
EP068A: OC Pesticides					
a-BHC	0.025	<0.025	<0.025	n/a	
HCB	0.025	<0.025	<0.025	n/a	
b- & g-BHC	0.05	<0.05	<0.05	n/a	
d-BHC	0.025	<0.025	<0.025	n/a	
Heptachlor	0.025	<0.025	<0.025	n/a	
Aldrin	0.025	<0.025	<0.025	n/a	
Heptachlor epoxide	0.025	<0.025	<0.025	n/a	
Chlordane peak no 1	0.025	<0.025	<0.025	n/a	
Endosulfan 1	0.025	<0.025	<0.025	n/a	
Chlordane peak no. 2	0.025	<0.025	<0.025	n/a	
Dieldrin	0.025	<0.025	<0.025	n/a	
DDE	0.025	<0.025	<0.025	n/a	
Endrin	0.025	<0.025	<0.025	n/a	
Endosulfan 2	0.025	<0.025	<0.025	n/a	
DDD	0.025	<0.025	<0.025	n/a	
Endrin aldehyde	0.025	<0.025	<0.025	n/a	
Endosulfan sulfate	0.025	<0.025	<0.025	n/a	
DDT	0.1	<0.1	<0.1	n/a	
Endrin ketone	0.025	<0.025	<0.025	n/a	
Methoxychlor	0.1	<0.1	<0.1	n/a	
EP068B: OP Pesticides					
Dichlorvos	0.025	<0.025	<0.025	n/a	
Demeton-s-methyl	0.025	<0.025	<0.025	n/a	
Monocroptophos	0.1	<0.1	<0.1	n/a	
Dimethoate	0.025	<0.025	<0.025	n/a	
Diazinon	0.025	<0.025	<0.025	n/a	
Chlorpyrifos methyl	0.025	<0.025	<0.025	n/a	
Parathion methyl	0.1	<0.1	<0.1	n/a	
Malathion	0.025	<0.025	<0.025	n/a	
Fenthion	0.025	<0.025	<0.025	n/a	
Chlorpyrifos	0.025	<0.025	<0.025	n/a	
Parathion	0.1	<0.1	<0.1	n/a	
Pirimphos ethyl	0.025	<0.025	<0.025	n/a	
Chlorfenvinphos E	0.025	<0.025	<0.025	n/a	
Chlorfenvinphos Z	0.025	<0.025	<0.025	n/a	
Bromophos ethyl	0.025	<0.025	<0.025	n/a	
Fenamiphos	0.025	<0.025	<0.025	n/a	
Prothiofos	0.025	<0.025	<0.025	n/a	
Ethion	0.025	<0.025	<0.025	n/a	
Carbofenthion	0.025	<0.025	<0.025	n/a	
Azinphos methyl	0.025	<0.025	<0.025	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869
MATRIX : Soils
ANALYST: A.K

COMPOUND	LOR	QC DUPLICATE RESULTS			
		ES51269 4	**ES51269** 4D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP068C: Triazines					
Simazine	0.025	<0.025	<0.025	n/a	
Atrazine	0.025	<0.025	<0.025	n/a	
EP068D: Pyrethroids					
Cypermethrins(multipeaks)	0.1	<0.1	<0.1	n/a	
EP068S: OC Surrogate					
Dibromo-DDE	1%	110%	104%	5.61	0 - 20
EP068T: OP Surrogate					
DEF	1%	117%	120%	2.53	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869
MATRIX : Soils
ANALYST: A.K

COMPOUND	LOR	QC DUPLICATE RESULTS			
		ES51269 11	ES51269 11D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP068A : OC Pesticides					
a-BHC	0.025	<0.025	<0.025	n/a	
HCB	0.025	<0.025	<0.025	n/a	
b- & g-BHC	0.05	<0.05	<0.05	n/a	
d-BHC	0.025	<0.025	<0.025	n/a	
Heptachlor	0.025	<0.025	<0.025	n/a	
Aldrin	0.025	<0.025	<0.025	n/a	
Heptachlor epoxide	0.025	<0.025	<0.025	n/a	
Chlordane peak no 1	0.025	<0.025	<0.025	n/a	
Endosulfan 1	0.025	<0.025	<0.025	n/a	
Chlordane peak no. 2	0.025	<0.025	<0.025	n/a	
Dieldrin	0.025	<0.025	<0.025	n/a	
DDE	0.025	<0.025	<0.025	n/a	
Endrin	0.025	<0.025	<0.025	n/a	
Endosulfan 2	0.025	<0.025	<0.025	n/a	
DDD	0.025	<0.025	<0.025	n/a	
Endrin aldehyde	0.025	<0.025	<0.025	n/a	
Endosulfan sulfate	0.025	<0.025	<0.025	n/a	
DDT	0.1	<0.1	<0.1	n/a	
Endrin ketone	0.025	<0.025	<0.025	n/a	
Methoxychlor	0.1	<0.1	<0.1	n/a	
EP068B : OP Pesticides					
Dichlorvos	0.025	<0.025	<0.025	n/a	
Demeton-s-methyl	0.025	<0.025	<0.025	n/a	
Monocroptophos	0.1	<0.1	<0.1	n/a	
Dimethoate	0.025	<0.025	<0.025	n/a	
Diazinon	0.025	<0.025	<0.025	n/a	
Chlorpyrifos methyl	0.025	<0.025	<0.025	n/a	
Parathion methyl	0.1	<0.1	<0.1	n/a	
Malathion	0.025	<0.025	<0.025	n/a	
Fenthion	0.025	<0.025	<0.025	n/a	
Chlorpyrifos	0.025	<0.025	<0.025	n/a	
Parathion	0.1	<0.1	<0.1	n/a	
Pirimphos ethyl	0.025	<0.025	<0.025	n/a	
Chlorfenvinphos E	0.025	<0.025	<0.025	n/a	
Chlorfenvinphos Z	0.025	<0.025	<0.025	n/a	
Bromophos ethyl	0.025	<0.025	<0.025	n/a	
Fenamiphos	0.025	<0.025	<0.025	n/a	
Prothiofos	0.025	<0.025	<0.025	n/a	
Ethion	0.025	<0.025	<0.025	n/a	
Carbofenthion	0.025	<0.025	<0.025	n/a	
Azinphos methyl	0.025	<0.025	<0.025	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1869
MATRIX : Soils
ANALYST: A.K

COMPOUND	LOR	QC DUPLICATE RESULTS			
		ES51269 11	**ES51269** 11D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP068C : Triazines					
Simazine	0.025	<0.025	<0.025	n/a	
Atrazine	0.025	<0.025	<0.025	n/a	
EP068D : Pyrethroids					
Cypermethrins(multipeaks)	0.1	<0.1	<0.1	n/a	
EP068S : OC Surrogate					
Dibromo-DDE	1%	112%	110%	1.8	0 - 20
EP068T : OP Surrogate					
DEF	1%	120%	116%	3.39	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- MATRIX SPIKE/DUPLICATE

ALS EP-068 : Semivolatile Organic Compounds

QC LOT No. : NOCOPS1869 ANALYST : A.K

MATRIX: Soils Sample ID: ES51269-11

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS				Cont. Limit
			MS Rec.	MSD Rec.	Average Rec.	RPD	RPD
	mg/kg	mg/kg	%	%	%	%	%
EP068A: OC Pesticides							
b- & g-BHC	<0.05	0.25	97.3	90.2	93.8	7.57	0 - 20
Heptachlor	<0.025	0.25	82.3	68.3	75.3	18.6	0 - 20
Aldrin	<0.025	0.25	97.2	97.1	97.2	0.103	0 - 20
Dieldrin	<0.025	0.25	99.8	98.7	99.3	1.11	0 - 20
Endrin	<0.025	1	105	87.7	96.4	18	0 - 20
DDT	<0.1	1	78.4	81.8	80.1	4.24	0 - 20
EP068: OP Pesticides							
Diazinon	<0.025	0.25	102	101	102	0.985	0 - 20
Chlorpyrifos methyl	<0.025	0.25	102	102	102	0	0 - 20
Pirimiphos ethyl	<0.025	0.25	101	103	102	1.96	0 - 20
Bromophos ethyl	<0.025	0.25	71.9	72.2	72.1	0.416	0 - 20
Prothiofos	<0.025	0.25	98.7	101	99.9	2.3	0 - 20
EP068S: OC Surrogate							
Dibromo-DDE	112%	0.5	119	118	119	0.844	0 - 20
EP068T: OP Surrogate							
DEF	120%	0.5	114	117	116	2.6	0 - 20

COMMENTS:

1) The RPD control limits are fixed.

2) *: RPD falls outside the recommended control limit.

QUALITY CONTROL REPORTS

ALS EP-071 : Total Petroleum Hydrocarbons (Semivolatile)

QC LOT No. : NTPHT5575 **Analyst:** TRANG

MATRIX: Soil **QC Schedule:** 3

CONTROL SPIKES

COMPOUND	Blank Conc	Spike Level	LCS Rec.	Control Limits Rec.	
	mg/kg	mg/kg	%	Low	High
TPH Bands					
TPH(C10 - C14)	<50	200	92	79	112
TPH(C15 - C28)	<100	200	94	84	108
TPH(C29 - C36)	<100	200	83	76	117

MATRIX SPIKES

Sample ID: ES51384-4

COMPOUND	Sample Results	Spike Level	MS Rec.	Control Limits Rec.	
	mg/kg	mg/kg	%	Low	High
TPH Bands					
TPH(C10 - C14)	<50	594	88	70	112
TPH(C15 - C28)	<100	2870	96	70	108
TPH(C29 - C36)	<100	2630	102	70	117

DUPLICATE 1

Sample ID: ES51384-4

COMPOUND	LOR	Original	Duplicate	RPD	
	mg/kg	mg/kg	mg/kg	RPD	Cont. Limit
				%	
TPH Bands					
TPH(C10 - C14)	50	<50	<50	n/a	No Limit
TPH(C15 - C28)	100	<100	<100	n/a	No Limit
TPH(C29 - C36)	100	<100	<100	n/a	No Limit

DUPLICATE 2

Sample ID: ES51384-5

COMPOUND	LOR	Original	Duplicate	RPD	
	mg/kg	mg/kg	mg/kg	RPD	Cont. Limit
				%	
TPH Bands					
TPH(C10 - C14)	50	<50	<50	n/a	No Limit
TPH(C15 - C28)	100	<100	<100	n/a	No Limit
TPH(C29 - C36)	100	<100	<100	n/a	No Limit

Notes:

1) The recovery control limits for control spikes are based on ALS laboratory statistical data. (Method QWI-ORG/07)
2) The control limits on RPD (relative percent deviation) for control spikes are fixed.
3) * : Recovery or RPD falls outside of the recommended control limits.
4) No control limits are applied to matrix spike recoveries due to the diversity of matrix types
5)The permitted range for RPD for duplicates specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

- LOR to10x LOR - no limit
- 10x LOR to20x LOR - 50%
- >20x LOR - 20%

QUALITY CONTROL REPORT

ALS EP-071/80 : Total Petroleum Hydrocarbons (Volatile)/BTEX

QC LOT No. : *NVOCS5575*

Analyst: Yasuhiro Fujii

MATRIX: Soil

QC Schedule: 3

CONTROL SPIKES

COMPOUND	Blank Conc	Spike Level	SPIKE QC RESULTS SCS Rec.	DCS Rec.	Average Rec.	RPD	Control Limits Rec. Low	Rec. High	RPD
	mg/kg	mg/kg	%		%	%			%
EP071 TRH(V)									
TPH(C6 - C9)	<2	52	99	98	98.5	1	87.2	114	0 - 20
EP080/EP071 BTEX									
Benzene	<0.2	2	106	94	100	12	90	111	0 - 20
Toluene	<0.2	2	102	108	105	5.7	87	116	0 - 20
Chlorobenzene	<0.2	2	111	103	107	7.5	94	109	0 - 20
Ethyl benzene	<0.2	2	104	99	102	4.9	85.5	117	0 - 20
m- & p-Xylene	<0.2	2	103	96	99.5	7	88.2	114	0 - 20
o-Xylene	<0.2	2	112	103	108	8.4	91.6	112	0 - 20
EP080/S Surrogates									
1,2 Dichloroethane-D4	100	10	104	109	106	4.7	79.6	119	0 - 20
Toluene-D8	99.7	10	99.6	97.2	98.4	2.4	79.6	116	0 - 20
4-Bromofluorobenzene	98.5	10	99.6	106	103	6.2	80.5	115	0 - 20

DUPLICATE1

Sample ID: ES51384-4

COMPOUND	LOR	Original	Duplicate	RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP071 TRH(V)					
TPH(C6 - C9)	2	<2	<2	n/a	No Limit
EP080/BTEX					
Benzene	0.2	<0.2	<0.2	n/a	No Limit
Toluene	0.2	<0.2	<0.2	n/a	No Limit
Chlorobenzene	0.2	<0.2	<0.2	n/a	No Limit
Ethyl benzene	0.2	<0.2	<0.2	n/a	No Limit
m- & p-Xylene	0.2	<0.2	<0.2	n/a	No Limit
o-Xylene	0.2	<0.2	<0.2	n/a	No Limit
EP080/S Surrogates					
1,2 Dichloroethane-D4	0.5	104	105	1	0 - 20
Toluene-D8	0.5	98	96.4	1.6	0 - 20
4-Bromofluorobenzene	0.5	113	107	5.4	0 - 20

MATRIX SPIKES

Sample ID: ES51384-4

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS MS Rec.	MSD Rec.	Average Rec.	RPD	Control Limits Rec. Low	Rec. High	RPD
	mg/kg	mg/kg	%	%	%	%			%
EP071 TRH(V)									
TPH(C6 - C9)	<2	50	99	99	99	0	70	114	0 - 35
EP080/BTEX									
Benzene	<0.2	5	102	103	102	1	70	111	0 - 35
Toluene	<0.2	5	102	100	101	2	70	116	0 - 35
Chlorobenzene	<0.2	5	105	104	104	1	70	109	0 - 35
Ethyl benzene	<0.2	5	107	106	106	0.9	70	117	0 - 35
m- & p-Xylene	<0.2	5	98	103	100	5	70	114	0 - 35
o-Xylene	<0.2	5	102	106	104	3.8	70	112	0 - 35
EP080/S Surrogates									
1,2 Dichloroethane-D4	104	10	99.3	114	107	13.8	70	119	0 - 35
Toluene-D8	98	10	108	116	112	7.1	70	116	0 - 35
4-Bromofluorobenzene	113	10	108	99.2	104	8.5	70	115	0 - 35

DUPLICATE2

Sample ID: ES51384-5

COMPOUND	LOR	Original	Duplicate	RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP071 TRH(V)					
TPH(C6 - C9)	2	<2	<2	n/a	No Limit
EP080/BTEX					
Benzene	0.2	<0.2	<0.2	n/a	No Limit
Toluene	0.2	<0.2	<0.2	n/a	No Limit
Chlorobenzene	0.2	<0.2	<0.2	n/a	No Limit
Ethyl benzene	0.2	<0.2	<0.2	n/a	No Limit
m- & p-Xylene	0.2	<0.2	<0.2	n/a	No Limit
o-Xylene	0.2	<0.2	<0.2	n/a	No Limit
EP080/S Surrogates					
1,2 Dichloroethane-D4	0.5	91	95.2	4.5	0 - 20
Toluene-D8	0.5	79.3	86.3	8.4	0 - 20
4-Bromofluorobenzene	0.5	98.1	106	7.7	0 - 20

Notes:

1) The recovery control limits for control spikes are based on ALS laboratory statistical data. (Method QWI-ORG/07). 80% of the analytes must fall within the control limits.
2) The control limits on RPD (relative percent deviation) for control spikes are fixed <20%.
3) * : Recovery or RPD falls outside of the recommended control limits.
4) No control limits are applied to matrix spike recoveries due to the diversity of matrix types
5)The permitted range for RPD for duplicates specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

- LOR to10x LOR - no limit
- 10x LOR to20x LOR - 50%
- >20x LOR - 20%

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST M.TAN

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP075A(SA): PHENOLS									
Phenol	<0.25	0.1	97.2	101	99.1	3.83	71	119	0 - 35
2-Chlorophenol	<0.25	0.1	99.4	98.1	98.8	1.32	85.5	105	0 - 35
2-Methylphenol	<0.25	0.1	89.5	95.6	92.6	6.59	73.3	106	0 - 35
3&4-Methylphenol	<0.5	0.2	106	104	105	1.9	68.4	111	0 - 35
2-Nitrophenol	<0.25	0.1	84.9	99.4	92.2	15.7	59.6	119	0 - 35
2,4-Dimethylphenol	<0.25	0.1	89	87.9	88.5	1.24	78.5	105	0 - 35
2,4-Dichlorophenol	<0.25	0.1	94	89	91.5	5.46	72.6	112	0 - 35
2,6-Dichlorophenol	<0.25	0.1	100	98.5	99.3	1.51	78.5	110	0 - 35
4-Chloro-3-methylphenol	<0.25	0.1	101	97.8	99.4	3.22	76.9	106	0 - 35
2,4,6-Trichlorophenol	<0.25	0.1	88.2	83.4	85.8	5.59	67.4	110	0 - 35
2,4,5-Trichlorophenol	<0.25	0.1	94.2	89.3	91.8	5.34	72.5	113	0 - 35
Pentachlorophenol	<0.5	0.2	57.1	55.7	56.4	2.48	23.1	111	0 - 35
EP075B(SA): POLYAROMATIC HYDROCARBONS									
Naphthalene	<0.25	0.1	97	102	99.5	5.03	86.8	103	0 - 35
Acenaphthylene	<0.25	0.1	102	97.4	99.7	4.61	84.8	107	0 - 35
Acenaphthene	<0.25	0.1	98.4	97.4	97.9	1.02	87.3	105	0 - 35
Fluorene	<0.25	0.1	101	97.4	99.2	3.63	85	105	0 - 35
Phenanthrene	<0.25	0.1	90	89.3	89.7	0.78	84.5	113	0 - 35
Anthracene	<0.25	0.1	93.8	96.8	95.3	3.15	87.8	107	0 - 35
Fluoranthene	<0.25	0.1	96.3	97.7	97	1.44	87.4	105	0 - 35
Pyrene	<0.25	0.1	93	97.6	95.3	4.83	75	105	0 - 35
Benz(a)anthracene	<0.25	0.1	102	95.7	98.9	6.37	85.1	100	0 - 35
Chrysene	<0.25	0.1	99	97	98	2.04	84	111	0 - 35
Benzo(b)fluoranthene	<0.25	0.1	97	94.8	95.9	2.29	68.2	112	0 - 35
Benzo(k)fluoranthene	<0.25	0.1	98.3	96.6	97.5	1.74	69.9	129	0 - 35
Benzo(a)pyrene	<0.25	0.1	98.7	99.8	99.3	1.11	82.5	108	0 - 35
Indeno(1,2,3-cd)pyrene	<0.25	0.1	98.3	95.2	96.8	3.2	75.6	110	0 - 35
Dibenz(a,h)anthracene	<0.25	0.1	96.8	93.2	95	3.79	76.5	107	0 - 35
Benzo(g,h,i)perylene	<0.25	0.1	101	99.2	100	1.8	76.1	109	0 - 35

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST M.TAN

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP075S-AS - ACID EXTRACTABLE SURROGATES									
2-Fluorophenol	102%	0.2	91.3	109	100	17.7	40.6	144	0 - 35
Phenol-d6	96%	0.2	103	96.7	99.9	6.31	68.8	125	0 - 35
2-Chlorophenol-d4	89.6%	0.2	96.7	91.2	94	5.85	71.8	117	0 - 35
2,4,6-Tribromophenol	67.6%	0.2	83.8	79.6	81.7 *	5.14	81.9	117	0 - 35
EP075T-AS - BASE/NEUTRAL EXTRACTABLE SURROGATES									
2-Fluorobiphenyl	94.4%	0.2	107	102	105	4.78	75.4	115	0 - 35
Anthracene-d10	91.4%	0.2	102	99.7	101	2.28	72.9	121	0 - 35
4-Terphenyl-d14	91.6%	0.2	102	97.4	99.7	4.61	67.2	112	0 - 35

COMMENTS:

1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)

2) The control limits on RPD (relative percent deviation) are fixed.

3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP075A-SA: PHENOLS					
Phenol	0.5	<0.25	<0.25	n/a	
2-Chlorophenol	0.5	<0.25	<0.25	n/a	
2-Methylphenol	0.5	<0.25	<0.25	n/a	
3&4-Methylphenol	1	<0.5	<0.5	n/a	
2-Nitrophenol	0.5	<0.25	<0.25	n/a	
2,4-Dimethylphenol	0.5	<0.25	<0.25	n/a	
2,4-Dichlorophenol	0.5	<0.25	<0.25	n/a	
2,6-Dichlorophenol	0.5	<0.25	<0.25	n/a	
4-Chloro-3-methylphenol	0.5	<0.25	<0.25	n/a	
2,4,6-Trichlorophenol	0.5	<0.25	<0.25	n/a	
2,4,5-Trichlorophenol	0.5	<0.25	<0.25	n/a	
Pentachlorophenol	1	<0.5	<0.5	n/a	
EP075B-SA: POLYNUCLEAR AROMATIC HYDROCARBONS					
Naphthalene	0.5	<0.25	<0.25	n/a	
Acenaphthylene	0.5	<0.25	<0.25	n/a	
Acenaphthene	0.5	<0.25	<0.25	n/a	
Fluorene	0.5	<0.25	<0.25	n/a	
Phenanthrene	0.5	<0.25	0.254	1.59	No limit
Anthracene	0.5	<0.25	<0.25	n/a	
Fluoranthene	0.5	0.709	0.77	8.25	No limit
Pyrene	0.5	0.728	0.779	6.77	No limit
Benz(a)anthracene	0.5	0.41	0.471	13.8	No limit
Chrysene	0.5	0.315	0.333	5.56	No limit
Benzo(b)&(k)fluoranthene	0.5	0.467	0.472	1.06	No limit
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(a)pyrene	0.5	0.392	0.407	3.75	No limit
Indeno(1,2,3-cd)pyrene	0.5	<0.25	<0.25	n/a	
Dibenz(a,h)anthracene	0.5	<0.25	<0.25	n/a	
Benzo(g,h,i)perylene	0.5	<0.25	<0.25	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075S-AS : ACID EXTRACTABLE SURROGATES					
2-Fluorophenol	1%	87.8%	84.5%	3.83	0 - 20
Phenol-d6	1%	101%	104%	2.93	0 - 20
2-Chlorophenol-d4	1%	89.2%	96.3%	7.65	0 - 20
2,4,6-Tribromophenol	1%	83.6%	88.7%	5.92	0 - 20
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES					
2-Fluorobiphenyl	1%	91.5%	98.9%	7.77	0 - 20
Anthracene-d10	1%	91.3%	97.8%	6.87	0 - 20
4-Terphenyl-d14	1%	103%	94.4%	8.71	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429	**ES51429**		
		28	28D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075A-SA : PHENOLS					
Phenol	0.5	<0.25	<0.25	n/a	
2-Chlorophenol	0.5	<0.25	<0.25	n/a	
2-Methylphenol	0.5	<0.25	<0.25	n/a	
3&4-Methylphenol	1	<0.5	<0.5	n/a	
2-Nitrophenol	0.5	<0.25	<0.25	n/a	
2,4-Dimethylphenol	0.5	<0.25	<0.25	n/a	
2,4-Dichlorophenol	0.5	<0.25	<0.25	n/a	
2,6-Dichlorophenol	0.5	<0.25	<0.25	n/a	
4-Chloro-3-methylphenol	0.5	<0.25	<0.25	n/a	
2,4,6-Trichlorophenol	0.5	<0.25	<0.25	n/a	
2,4,5-Trichlorophenol	0.5	<0.25	<0.25	n/a	
Pentachlorophenol	1	<0.5	<0.5	n/a	
EP-075B-SA : POLYNUCLEAR AROMATIC HYDROCARBONS					
Naphthalene	0.5	<0.25	<0.25	n/a	
Acenaphthylene	0.5	<0.25	<0.25	n/a	
Acenaphthene	0.5	<0.25	<0.25	n/a	
Fluorene	0.5	<0.25	<0.25	n/a	
Phenanthrene	0.5	<0.25	<0.25	n/a	
Anthracene	0.5	<0.25	<0.25	n/a	
Fluoranthene	0.5	<0.25	<0.25	n/a	
Pyrene	0.5	<0.25	<0.25	n/a	
Benz(a)anthracene	0.5	<0.25	<0.25	n/a	
Chrysene	0.5	<0.25	<0.25	n/a	
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(a)pyrene	0.5	<0.25	<0.25	n/a	
Indeno(1,2,3-cd)pyrene	0.5	<0.25	<0.25	n/a	
Dibenz(a,h)anthracene	0.5	<0.25	<0.25	n/a	
Benzo(g,h,i)perylene	0.5	<0.25	<0.25	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 28	**ES51429** 28D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075S-AS : ACID EXTRACTABLE SURROGATES					
2-Fluorophenol	1%	98.1%	81.9%	18	0 - 20
Phenol-d6	1%	96.2%	93.2%	3.17	0 - 20
2-Chlorophenol-d4	1%	84.7%	85.8%	1.29	0 - 20
2,4,6-Tribromophenol	1%	83.2%	85%	2.14	0 - 20
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES					
2-Fluorobiphenyl	1%	92%	87.9%	4.56	0 - 20
Anthracene-d10	1%	77.6%	86.6%	11	0 - 20
4-Terphenyl-d14	1%	101%	96.8%	4.25	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- MATRIX SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST : M.TAN

MATRIX: Soils Sample ID: ES51429-27

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS				Cont. Limit
			MS Rec.	MSD Rec.	Average Rec.	RPD	RPD
	mg/kg	mg/kg	%	%	%	%	%
EP.075A-SA : PHENOLS							
Phenol	<0.25	10	92.3	90.9	91.6	1.53	0 - 35
2-Chlorophenol	<0.25	10	99.8	90.8	95.3	9.44	0 - 35
2-Nitrophenol	<0.25	10	83.1	90.3	86.7	8.3	0 - 35
4-Chloro-3-methylphenol	<0.25	10	98.7	97.2	98	1.53	0 - 35
Pentachlorophenol	<0.5	10	50.2	46.9	48.6	6.8	0 - 35
EP.075B-SA : POLYAROMATIC HYDROCARBONS							
Acenaphthene	<0.25	10	97.8	92.6	95.2	5.46	0 - 35
Pyrene	0.728	10	103	104	104	0.966	0 - 35
EP.075S-AS : ACID EXTRACTABLE SURROGATES							
2-Fluorophenol	87.8%	8	90.5	76.4	83.5	16.9	0 - 35
Phenol-d6	101%	8	99.4	99.3	99.4	0.101	0 - 35
2-Chlorophenol-d4	89.2%	8	104	92.8	98.4	11.4	0 - 35
2,4,6-Tribromophenol	83.6%	8	93.3	89.8	91.6	3.82	0 - 35
EP.075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES							
2-Fluorobiphenyl	91.5%	8	103	94.4	98.7	8.71	0 - 35
Anthracene-d10	91.3%	8	101	91.9	96.5	9.43	0 - 35
4-Terphenyl-d14	103%	8	98.8	84.3	91.6	15.8	0 - 35

COMMENTS:

1) The RPD control limits are fixed.

2) *: Recoveries or RPD's fall outside the specified limits.

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164
Locked Bag 106 Wetherill Park BC 1851
Phone: 61-2-8784 8555 **Fax: 61-2-8784 8500** Website: www.alsenviro.com

Inter Lab
Area D, B, A.

ALS Environmental

COC RETURN HEADER SHEET

ATTENTION Andrew Barwick FAX NO. (02) 9911-1001

COMPANY Coffey DATE 01-11-4

CC No OF PAGES 2

FROM **Sample Receipt – ALS SYDNEY** Soy Steph

SUBJECT **Signed COC follows.**

Please find attached signed copies of your COC including the following information:

Your Project ID: E12723/3

ALS Batch No.: ES51528

Date / Time Samples Received at ALS: 01-11-4 . 4oopm

NB. Sample Condition Report and Due date for reporting will be provided on your Sample Receipt Advice (to follow). If you do not receive your Sample Receipt Advice within 24 hours of this notification, please contact the laboratory immediately.

11

This facsimile message contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action in respect of its contents. If you have received this facsimile in error, please notify ALS immediately and return it to the above fax.

A Campbell Brothers Limited Company

ENFM (348/1)

No: 27269

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723 | 3

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS 277 Woodpark Rd Smithfield	Sampled by: T. Delac	Consigning Office: / Date Dispatched:
Attention:	Project Manager: (report results to) Andrew Barwick	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Barwick	1/11/04		Morgan (Custom Transport) 51		

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	VOC	8 OP	Asbestos	Sample Condition on Receipt
	Soil	JAR + ICE	DUP 2 (1)		/	/	/	/				
			DUP 5 (2)		/	/	/	/				
			DUP 6 (3)		/	/	/	/				
			DUP 8 (4)		/	/	/	/				
			DUP 10 (5)		/	/	/	/		/	/	

Batch No: ES1528 [Old:]

Batched date: 9/11/04

- [x] Soil
- [ ] Ambient
- [ ] Water
- [x] Chilled
- [ ] Other ___ °C
- [ ] Subcontract Work
- [ ] Bottle Return
- [ ] Imm. Anal. Actioned

CONTRACT WORK

BACTO. AS.E.T.

Asbestos.

1 x soil bags

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

Received by: Jenny ALS. 1/11/04. 4.00pm.

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

No: 27269

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS 277 Woodpark Rd Smithfield	Sampled by: T. Delac	Consigning Office: / Date Dispatched:
Attention:	Project Manager: (report results to) Andrew Barwick	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Barwick	1/11/04		Morgan (courier) 51		

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: As	VOC	8	OP	Pb	Sample Condition on Receipt
	SOIL	JAR + ICE	DUP 2		✓	✓	✓	✓					
			DUP 5		✓	✓	✓	✓					
			DUP 6		✓	✓	✓	✓					
			DUP 8		✓	✓	✓	✓					
			DUP 10		✓	✓	✓	✓		✓		✓	

Special Laboratory Instructions:

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Detection Limits:

Turnaround Required:

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey BLUE: To be returned with results

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51721
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	0
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	05/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	18/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	1
PROJECT:			

COMMENTS

Sample as received digested by USEPA method 200.2 (modified) prior to the determination of metals. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil – **Senior Inorganic Chemist**
Marc Centner – **Technical Manager**
Peter Dickenson – **Senior Inorganic Chemist**
Daniel Um – **Senior Organic Chemist**

Reports signed by signatories as required

Batch: ES51721
Sub Batch: 0
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1									
		Date Sampled		01/11/2004									
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	13.5									
EG-005T	Arsenic - Total	mg/kg	1	2									
EG-005T	Cadmium - Total	mg/kg	1	<1									
EG-005T	Chromium - Total	mg/kg	1	<1									
EG-005T	Copper - Total	mg/kg	1	<1									
EG-005T	Nickel - Total	mg/kg	1	<1									
EG-005T	Lead - Total	mg/kg	1	3									
EG-005T	Zinc - Total	mg/kg	1	11									
EG-035T	Mercury - Total	mg/kg	0.1	<0.1									

Batch: ES51721
Sub Batch: 0
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		200	201	202							
		Date Sampled		05/11/2004	05/11/2004	05/11/2004							
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	LCS	MS							
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----							
EG-005T	Arsenic - Total	mg/kg	1	<1	91.0%	91.0%							
EG-005T	Cadmium - Total	mg/kg	1	<1	82.0%	99.0%							
EG-005T	Chromium - Total	mg/kg	1	<1	90.0%	98.0%							
EG-005T	Copper - Total	mg/kg	1	<1	91.0%	98.0%							
EG-005T	Nickel - Total	mg/kg	1	<1	91.0%	98.0%							
EG-005T	Lead - Total	mg/kg	1	<1	88.0%	97.0%							
EG-005T	Zinc - Total	mg/kg	1	<1	98.0%	93.0%							
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	99.0%	102%							

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51721
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	1
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	05/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	18/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	1
PROJECT:			

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil Senior Inorganic Chemist
Marc Centner Technical Manager
Peter Dickenson Senior Inorganic Chemist
Daniel Um Senior Organic Chemist

Reports signed by signatories as required

Batch: ES51721
Sub Batch: 1
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1									
		Date Sampled		01/11/2004									
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	13.5									
EP-071-SS	**TOTAL PETROLEUM HYDROCARBONS**												
EP-071-SS	C6 - C9 Fraction	mg/kg	2	<2									
EP-071-SS	C10 - C14 Fraction	mg/kg	50	<50									
EP-071-SS	C15 - C28 Fraction	mg/kg	100	<100									
EP-071-SS	C29 - C36 Fraction	mg/kg	100	<100									
EP-080-SS	**BTEX**												
EP-080-SS	Benzene	mg/kg	0.2	<0.2									
EP-080-SS	Toluene	mg/kg	0.2	<0.2									
EP-080-SS	Chlorobenzene	mg/kg	0.2	<0.2									
EP-080-SS	Ethylbenzene	mg/kg	0.2	<0.2									
EP-080-SS	meta- & para-Xylene	mg/kg	0.2	<0.2									
EP-080-SS	ortho-Xylene	mg/kg	0.2	<0.2									
EP-080S-SS	**VOLATILE TPH/BTEX COMPOUND SURROGATES**												
EP-080S-SS	1.2-Dichloroethane-D4	%	1	85									
EP-080S-SS	Toluene-D8	%	1	106									
EP-080S-SS	4-Bromofluorobenzene	%	1	100									

Batch: ES51721
Sub Batch: 1
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		200	201	202	203	204					
		Date Sampled		05/11/2004	05/11/2004	05/11/2004	05/11/2004	05/11/2004					
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NTPHT5585 SCS	NTPHT5585 DCS	NTPHT5585 MS	NTPHT5585 MSD					
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----					
EP-071-SS	**TOTAL PETROLEUM HYDROCARBONS**												
EP-071-SS	C6 - C9 Fraction	mg/kg	2	<2	96.9%	96.1%	107%	107%					
EP-071-SS	C10 - C14 Fraction	mg/kg	50	<50	94.0%	99.0%	104%	104%					
EP-071-SS	C15 - C28 Fraction	mg/kg	100	<100	99.0%	111%	108%	108%					
EP-071-SS	C29 - C36 Fraction	mg/kg	100	<100	93.0%	108%	113%	112%					
EP-080-SS	**BTEX**												
EP-080-SS	Benzene	mg/kg	0.2	<0.2	92.8%	94.6%	99.4%	95.0%					
EP-080-SS	Toluene	mg/kg	0.2	<0.2	106%	97.7%	104%	93.9%					
EP-080-SS	Chlorobenzene	mg/kg	0.2	<0.2	108%	102%	100%	96.6%					
EP-080-SS	Ethylbenzene	mg/kg	0.2	<0.2	106%	104%	99.0%	104%					
EP-080-SS	meta- & para-Xylene	mg/kg	0.2	<0.2	107%	105%	96.2%	104%					
EP-080-SS	ortho-Xylene	mg/kg	0.2	<0.2	99.6%	101%	92.4%	93.8%					
EP-080S-SS	**VOLATILE TPH/BTEX COMPOUND SURROGATES**												
EP-080S-SS	1.2-Dichloroethane-D4	%	1	107	99	112	105	104					
EP-080S-SS	Toluene-D8	%	1	110	103	114	117	115					
EP-080S-SS	4-Bromofluorobenzene	%	1	98	100	100	117	103					

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51721
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	2
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	05/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	18/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	1
PROJECT:			

COMMENTS

Sample analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil – **Senior Inorganic Chemist**
Marc Centner – **Technical Manager**
Peter Dickenson – **Senior Inorganic Chemist**
Daniel Um – **Senior Organic Chemist**

Reports signed by signatories as required

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1									
		Date Sampled		01/11/2004									
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	13.5									
EP-074A-SS	**MONOCYCLIC AROMATIC HYDROCARBONS**												
EP-074A-SS	Benzene	mg/kg	0.5	<0.5									
EP-074A-SS	Toluene	mg/kg	0.5	<0.5									
EP-074A-SS	Ethylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	meta- & para-Xylene	mg/kg	0.5	<0.5									
EP-074A-SS	Styrene	mg/kg	0.5	<0.5									
EP-074A-SS	ortho-Xylene	mg/kg	0.5	<0.5									
EP-074A-SS	Isopropylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	n-Propylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	1.3.5-Trimethylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	sec-Butylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	1.2.4-Trimethylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	tert-Butylbenzene	mg/kg	0.5	<0.5									
EP-074A-SS	p-Isopropyltoluene	mg/kg	0.5	<0.5									
EP-074A-SS	n-Butylbenzene	mg/kg	0.5	<0.5									
EP-074B-SS	**OXYGENATED HYDROCARBONS**												
EP-074B-SS	Vinyl Acetate	mg/kg	5	<5									
EP-074B-SS	2-Butanone (MEK)	mg/kg	5	<5									
EP-074B-SS	4-Methyl-2-pentanone (MIBK)	mg/kg	5	<5									
EP-074B-SS	2-Hexanone (MBK)	mg/kg	5	<5									
EP-074C-SS	**SULFONATED COMPOUNDS**												
EP-074C-SS	Carbon disulfide	mg/kg	0.5	<0.5									
EP-074D-SS	**FUMIGANTS**												
EP-074D-SS	2.2-Dichloropropane	mg/kg	0.5	<0.5									
EP-074D-SS	1.2-Dichloropropane	mg/kg	0.5	<0.5									
EP-074D-SS	cis-1.3-Dichloropropylene	mg/kg	1	<1									
EP-074D-SS	trans-1.3-Dichloropropylene	mg/kg	1	<1									
EP-074D-SS	1.2-Dibromoethane (EDB)	mg/kg	0.5	<0.5									
EP-074E-SS	**HALOGENATED ALIPHATIC HYDROCARBONS (VOL)**												
EP-074E-SS	Dichlorodifluoromethane	mg/kg	5	<5									
EP-074E-SS	Chloromethane	mg/kg	5	<5									
EP-074E-SS	Vinyl chloride	mg/kg	5	<5									
EP-074E-SS	Bromomethane	mg/kg	5	<5									

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION										
		Laboratory I.D.		1										
		Date Sampled		01/11/2004										
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13										
EP-074E-SS	Chloroethane	mg/kg	5	<5										
EP-074E-SS	Trichlorofluoromethane	mg/kg	5	<5										
EP-074E-SS	1.1-Dichloroethene	mg/kg	0.5	<0.5										
EP-074E-SS	Iodomethane	mg/kg	0.5	<0.5										
EP-074E-SS	trans-1.2-Dichloroethene	mg/kg	0.5	<0.5										
EP-074E-SS	1.1-Dichloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	cis-1.2-Dichloroethene	mg/kg	0.5	<0.5										
EP-074E-SS	1.1.1-Trichloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	1.1-Dichloropropylene	mg/kg	0.5	<0.5										
EP-074E-SS	Carbon tetrachloride	mg/kg	0.5	<0.5										
EP-074E-SS	1.2-Dichloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	Trichloroethene	mg/kg	0.5	<0.5										
EP-074E-SS	Dibromomethane	mg/kg	0.5	<0.5										
EP-074E-SS	1.1.2-Trichloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	1.3-Dichloropropane	mg/kg	0.5	<0.5										
EP-074E-SS	Tetrachloroethene	mg/kg	0.5	<0.5										
EP-074E-SS	1.1.1.2-Tetrachloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	trans-1.4-Dichloro-2-butene	mg/kg	0.5	<0.5										
EP-074E-SS	cis-1.4-Dichloro-2-butene	mg/kg	0.5	<0.5										
EP-074E-SS	1.1.2.2-Tetrachloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	1.2.3-Trichloropropane	mg/kg	0.5	<0.5										
EP-074E-SS	Pentachloroethane	mg/kg	0.5	<0.5										
EP-074E-SS	1.2-Dibromo-3-chloropropane	mg/kg	0.5	<0.5										
EP-074E-SS	Hexachlorobutadiene	mg/kg	0.5	<0.5										
EP-074F-SS	**HALOGENATED AROMATIC HYDROCARBONS**													
EP-074F-SS	Chlorobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	Bromobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	2-Chlorotoluene	mg/kg	0.5	<0.5										
EP-074F-SS	4-Chlorotoluene	mg/kg	0.5	<0.5										
EP-074F-SS	1.3-Dichlorobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	1.4-Dichlorobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	1.2-Dichlorobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	1.2.4-Trichlorobenzene	mg/kg	0.5	<0.5										
EP-074F-SS	1.2.3-Trichlorobenzene	mg/kg	0.5	<0.5										
EP-074G-SS	**TRIHALOMETHANES (VOLATILES)**													

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1									
		Date Sampled		01/11/2004									
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13									
EP-074G-SS	Chloroform	mg/kg	0.5	<0.5									
EP-074G-SS	Bromodichloromethane	mg/kg	0.5	<0.5									
EP-074G-SS	Dibromochloromethane	mg/kg	0.5	<0.5									
EP-074G-SS	Bromoform	mg/kg	0.5	<0.5									
EP-074H-SS	**NAPHTHALENE**												
EP-074H-SS	Naphthalene	mg/kg	5	<5									
EP-074S-SS	**VOLATILE COMPOUND SURROGATES**												
EP-074S-SS	1.2-Dichloroethane-D4	%	1	107									
EP-074S-SS	Toluene-D8	%	1	110									
EP-074S-SS	4-Bromofluorobenzene	%	1	112									

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	SAMPLE IDENTIFICATION									
		Laboratory I.D.		100	101	102	103	104					
		Date Sampled		05/11/2004	05/11/2004	05/11/2004	05/11/2004	05/11/2004					
				METHOD BLANK	NVSCS855 SCS	NVSCS855 DCS	NVSCS855 MS	NVSCS855 MSD					
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----					
EP-074A-SS	**MONOCYCLIC AROMATIC HYDROCARBONS**												
EP-074A-SS	Benzene	mg/kg	0.5	<0.5	99.7%	97.7%	101%	88.6%					
EP-074A-SS	Toluene	mg/kg	0.5	<0.5	99.7%	98.6%	85.1%	85.3%					
EP-074A-SS	Ethylbenzene	mg/kg	0.5	<0.5	99.9%	99.9%	----	----					
EP-074A-SS	meta- & para-Xylene	mg/kg	0.5	<0.5	101%	98.0%	----	----					
EP-074A-SS	Styrene	mg/kg	0.5	<0.5	101%	98.9%	----	----					
EP-074A-SS	ortho-Xylene	mg/kg	0.5	<0.5	101%	99.8%	----	----					
EP-074A-SS	Isopropylbenzene	mg/kg	0.5	<0.5	100%	99.4%	----	----					
EP-074A-SS	n-Propylbenzene	mg/kg	0.5	<0.5	101%	102%	----	----					
EP-074A-SS	1.3.5-Trimethylbenzene	mg/kg	0.5	<0.5	102%	102%	----	----					
EP-074A-SS	sec-Butylbenzene	mg/kg	0.5	<0.5	102%	101%	----	----					
EP-074A-SS	1.2.4-Trimethylbenzene	mg/kg	0.5	<0.5	103%	102%	----	----					
EP-074A-SS	tert-Butylbenzene	mg/kg	0.5	<0.5	103%	101%	----	----					
EP-074A-SS	p-Isopropyltoluene	mg/kg	0.5	<0.5	103%	103%	----	----					
EP-074A-SS	n-Butylbenzene	mg/kg	0.5	<0.5	102%	101%	----	----					
EP-074B-SS	**OXYGENATED HYDROCARBONS**												
EP-074B-SS	Vinyl Acetate	mg/kg	5	<5	95.0%	98.9%	----	----					
EP-074B-SS	2-Butanone (MEK)	mg/kg	5	<5	91.8%	98.1%	----	----					
EP-074B-SS	4-Methyl-2-pentanone (MIBK)	mg/kg	5	<5	97.4%	95.3%	----	----					
EP-074B-SS	2-Hexanone (MBK)	mg/kg	5	<5	98.6%	99.6%	----	----					
EP-074C-SS	**SULFONATED COMPOUNDS**												
EP-074C-SS	Carbon disulfide	mg/kg	0.5	<0.5	99.4%	95.4%	----	----					
EP-074D-SS	**FUMIGANTS**												
EP-074D-SS	2.2-Dichloropropane	mg/kg	0.5	<0.5	81.9%	98.8%	----	----					
EP-074D-SS	1.2-Dichloropropane	mg/kg	0.5	<0.5	101%	98.9%	----	----					
EP-074D-SS	cis-1.3-Dichloropropylene	mg/kg	1	<1	96.7%	98.2%	----	----					
EP-074D-SS	trans-1.3-Dichloropropylene	mg/kg	1	<1	94.5%	98.9%	----	----					
EP-074D-SS	1.2-Dibromoethane (EDB)	mg/kg	0.5	<0.5	101%	97.9%	----	----					
EP-074E-SS	**HALOGENATED ALIPHATIC HYDROCARBONS (VOL)**												
EP-074E-SS	Dichlorodifluoromethane	mg/kg	5	<5	96.4%	92.7%	----	----					
EP-074E-SS	Chloromethane	mg/kg	5	<5	101%	95.8%	----	----					

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION										
		Laboratory I.D.		100	101	102	103	104						
		Date Sampled		05/11/2004	05/11/2004	05/11/2004	05/11/2004	05/11/2004						
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NVSCS855 SCS	NVSCS855 DCS	NVSCS855 MS	NVSCS855 MSD						
				CHECKS AND SPIKES										
EP-074E-SS	Vinyl chloride	mg/kg	5	<5	102%	97.0%	----	----						
EP-074E-SS	Bromomethane	mg/kg	5	<5	97.0%	106%	----	----						
EP-074E-SS	Chloroethane	mg/kg	5	<5	100%	95.9%	----	----						
EP-074E-SS	Trichlorofluoromethane	mg/kg	5	<5	101%	95.0%	----	----						
EP-074E-SS	1.1-Dichloroethene	mg/kg	0.5	<0.5	103%	97.6%	94.6%	81.1%						
EP-074E-SS	Iodomethane	mg/kg	0.5	<0.5	94.1%	98.1%	----	----						
EP-074E-SS	trans-1.2-Dichloroethene	mg/kg	0.5	<0.5	100%	98.2%	----	----						
EP-074E-SS	1.1-Dichloroethane	mg/kg	0.5	<0.5	108%	104%	----	----						
EP-074E-SS	cis-1.2-Dichloroethene	mg/kg	0.5	<0.5	92.8%	92.1%	----	----						
EP-074E-SS	1.1.1-Trichloroethane	mg/kg	0.5	<0.5	98.9%	101%	----	----						
EP-074E-SS	1.1-Dichloropropylene	mg/kg	0.5	<0.5	105%	102%	----	----						
EP-074E-SS	Carbon tetrachloride	mg/kg	0.5	<0.5	85.2%	96.0%	----	----						
EP-074E-SS	1.2-Dichloroethane	mg/kg	0.5	<0.5	98.1%	96.0%	----	----						
EP-074E-SS	Trichloroethene	mg/kg	0.5	<0.5	104%	101%	89.4%	94.1%						
EP-074E-SS	Dibromomethane	mg/kg	0.5	<0.5	94.5%	96.9%	----	----						
EP-074E-SS	1.1.2-Trichloroethane	mg/kg	0.5	<0.5	98.9%	95.3%	----	----						
EP-074E-SS	1.3-Dichloropropane	mg/kg	0.5	<0.5	98.9%	98.7%	----	----						
EP-074E-SS	Tetrachloroethene	mg/kg	0.5	<0.5	101%	99.0%	----	----						
EP-074E-SS	1.1.1.2-Tetrachloroethane	mg/kg	0.5	<0.5	98.1%	99.2%	----	----						
EP-074E-SS	trans-1.4-Dichloro-2-butene	mg/kg	0.5	<0.5	92.6%	105%	----	----						
EP-074E-SS	cis-1.4-Dichloro-2-butene	mg/kg	0.5	<0.5	97.6%	102%	----	----						
EP-074E-SS	1.1.2.2-Tetrachloroethane	mg/kg	0.5	<0.5	96.5%	98.0%	----	----						
EP-074E-SS	1.2.3-Trichloropropane	mg/kg	0.5	<0.5	97.4%	97.1%	----	----						
EP-074E-SS	Pentachloroethane	mg/kg	0.5	<0.5	98.5%	102%	----	----						
EP-074E-SS	1.2-Dibromo-3-chloropropane	mg/kg	0.5	<0.5	97.7%	102%	----	----						
EP-074E-SS	Hexachlorobutadiene	mg/kg	0.5	<0.5	105%	103%	----	----						
EP-074F-SS	**HALOGENATED AROMATIC HYDROCARBONS**													
EP-074F-SS	Chlorobenzene	mg/kg	0.5	<0.5	101%	101%	81.5%	81.8%						
EP-074F-SS	Bromobenzene	mg/kg	0.5	<0.5	102%	101%	----	----						
EP-074F-SS	2-Chlorotoluene	mg/kg	0.5	<0.5	103%	102%	----	----						
EP-074F-SS	4-Chlorotoluene	mg/kg	0.5	<0.5	102%	101%	----	----						
EP-074F-SS	1.3-Dichlorobenzene	mg/kg	0.5	<0.5	102%	102%	----	----						

Batch: ES51721
Sub Batch: 2
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	SAMPLE IDENTIFICATION									
	Laboratory I.D.			100	101	102	103	104					
	Date Sampled			05/11/2004	05/11/2004	05/11/2004	05/11/2004	05/11/2004					
				METHOD BLANK	NVSCS855 SCS	NVSCS855 DCS	NVSCS855 MS	NVSCS855 MSD					
				CHECKS AND SPIKES									
EP-074F-SS	1.4-Dichlorobenzene	mg/kg	0.5	<0.5	102%	102%	----	----					
EP-074F-SS	1.2-Dichlorobenzene	mg/kg	0.5	<0.5	101%	100%	----	----					
EP-074F-SS	1.2.4-Trichlorobenzene	mg/kg	0.5	<0.5	99.9%	103%	----	----					
EP-074F-SS	1.2.3-Trichlorobenzene	mg/kg	0.5	<0.5	101%	104%	----	----					
EP-074G-SS	**TRIHALOMETHANES (VOLATILES)**												
EP-074G-SS	Chloroform	mg/kg	0.5	<0.5	101%	98.4%	----	----					
EP-074G-SS	Bromodichloromethane	mg/kg	0.5	<0.5	98.9%	100%	----	----					
EP-074G-SS	Dibromochloromethane	mg/kg	0.5	<0.5	101%	99.6%	----	----					
EP-074G-SS	Bromoform	mg/kg	0.5	<0.5	99.4%	97.7%	----	----					
EP-074H-SS	**NAPHTHALENE**												
EP-074H-SS	Naphthalene	mg/kg	5	<5	101%	109%	----	----					
EP-074S-SS	**VOLATILE COMPOUND SURROGATES**												
EP-074S-SS	1.2-Dichloroethane-D4	%	1	98	98	98	109	114					
EP-074S-SS	Toluene-D8	%	1	101	100	100	102	115					
EP-074S-SS	4-Bromofluorobenzene	%	1	97	99	97	92	98					

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT:	MR ANDREW BARWICK	**BATCH:**	ES51721
CLIENT:	COFFEY GEOSCIENCES PTY LTD	**SUB BATCH:**	3
ADDRESS:		**LABORATORY:**	SYDNEY
	PO BOX 125	**DATE RECEIVED:**	05/11/2004
	NORTH RYDE NSW 1670	**DATE COMPLETED:**	18/11/2004
		SAMPLE TYPE:	SOIL
ORDER No.:	E12723/3	**No. of SAMPLES:**	1
PROJECT:			

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: greg.vogel@alsenviro.com

Signatory

Nanthini Coilparampil
Senior Inorganic Chemist

Marc Centner
Technical Manager

Peter Dickenson
Senior Inorganic Chemist

Daniel Um
Senior Organic Chemist

Reports signed by signatories as required

Batch: ES51721
Sub Batch: 3
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

CERTIFICATE OF ANALYSIS

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		1									
		Date Sampled		01/11/2004									
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	DUP13									
EA-055	Moisture Content (dried @ 103°C)	%	0.1	13.5									
EP-075B-SA	**POLYNUCLEAR AROMATIC HYDROCARBONS (SIM)**												
EP-075B-SA	Naphthalene	mg/kg	0.5	<0.5									
EP-075B-SA	Acenaphthylene	mg/kg	0.5	<0.5									
EP-075B-SA	Acenaphthene	mg/kg	0.5	<0.5									
EP-075B-SA	Fluorene	mg/kg	0.5	<0.5									
EP-075B-SA	Phenanthrene	mg/kg	0.5	<0.5									
EP-075B-SA	Anthracene	mg/kg	0.5	<0.5									
EP-075B-SA	Fluoranthene	mg/kg	0.5	<0.5									
EP-075B-SA	Pyrene	mg/kg	0.5	<0.5									
EP-075B-SA	Benzo(a)anthracene	mg/kg	0.5	<0.5									
EP-075B-SA	Chrysene	mg/kg	0.5	<0.5									
EP-075B-SA	Benzo(b)fluoranthene	mg/kg	0.5	<0.5									
EP-075B-SA	Benzo(k)fluoranthene	mg/kg	0.5	<0.5									
EP-075B-SA	Benzo(a)pyrene	mg/kg	0.5	<0.5									
EP-075B-SA	Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5									
EP-075B-SA	Dibenzo(a.h)anthracene	mg/kg	0.5	<0.5									
EP-075B-SA	Benzo(g.h.I)perylene	mg/kg	0.5	<0.5									
EP-075T-AS	**PAH SURROGATES (SIM)**												
EP-075T-AS	2-Fluorobiphenyl	%	1	98									
EP-075T-AS	Anthracene-d10	%	1	94									
EP-075T-AS	4-Terphenyl-d14	%	1	95									

Batch: ES51721
Sub Batch: 3
Date of Issue: 18/11/2004
Client: COFFEY GEOSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT

				SAMPLE IDENTIFICATION									
		Laboratory I.D.		100	101	102	103	104					
		Date Sampled		05/11/2004	05/11/2004	05/11/2004	05/11/2004	05/11/2004					
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	METHOD BLANK	NEP075S720 SCS	NEP075S720 DCS	NEP075S720 MS	NEP075S720 MSD					
				CHECKS AND SPIKES									
EA-055	Moisture Content (dried @ 103'C)	%	0.1	----	----	----	----	----					
EP-075B-SA	**POLYNUCLEAR AROMATIC HYDROCARBONS (SIM)**												
EP-075B-SA	Naphthalene	mg/kg	0.5	<0.5	97.0%	102%	----	----					
EP-075B-SA	Acenaphthylene	mg/kg	0.5	<0.5	102%	97.4%	----	----					
EP-075B-SA	Acenaphthene	mg/kg	0.5	<0.5	98.4%	97.4%	97.8%	92.6%					
EP-075B-SA	Fluorene	mg/kg	0.5	<0.5	101%	97.4%	----	----					
EP-075B-SA	Phenanthrene	mg/kg	0.5	<0.5	90.0%	89.3%	----	----					
EP-075B-SA	Anthracene	mg/kg	0.5	<0.5	93.8%	96.8%	----	----					
EP-075B-SA	Fluoranthene	mg/kg	0.5	<0.5	96.3%	97.7%	----	----					
EP-075B-SA	Pyrene	mg/kg	0.5	<0.5	93.0%	97.6%	103%	104%					
EP-075B-SA	Benzo(a)anthracene	mg/kg	0.5	<0.5	102%	95.7%	----	----					
EP-075B-SA	Chrysene	mg/kg	0.5	<0.5	99.0%	97.0%	----	----					
EP-075B-SA	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	97.0%	94.8%	----	----					
EP-075B-SA	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	98.3%	96.6%	----	----					
EP-075B-SA	Benzo(a)pyrene	mg/kg	0.5	<0.5	98.7%	99.8%	----	----					
EP-075B-SA	Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	98.3%	95.2%	----	----					
EP-075B-SA	Dibenzo(a.h)anthracene	mg/kg	0.5	<0.5	96.8%	93.2%	----	----					
EP-075B-SA	Benzo(g.h.i)perylene	mg/kg	0.5	<0.5	101%	99.2%	----	----					
EP-075T-AS	**PAH SURROGATES (SIM)**												
EP-075T-AS	2-Fluorobiphenyl	%	1	94	107	102	103	94					
EP-075T-AS	Anthracene-d10	%	1	91	102	100	101	92					
EP-075T-AS	4-Terphenyl-d14	%	1	92	102	97	99	84					

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET4850/ 6998 / 1 - 1
Your ref: ES51721
NATA Accreditation No: 14484

9 November 2004

Australian Laboratory Services Pty Ltd
277 Woodpark Road
Smithfield
NSW 2164

Fax No: 02-8784 8500
Attn: Mr Greg Vogel

Dear Greg,

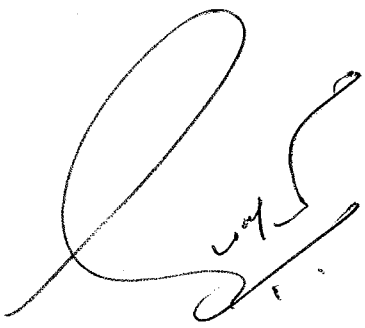
This report presents the results of one sample, forwarded by Australian Laboratory Services Pty Ltd, on 8 November 2004, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

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

3. Results: **Sample No. 1. ASET4850 / 6998 / 1. ES51721 - #1 - DUP13.**
Approx dimensions 7.5 cm x 1.0 cm x 5.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Analysed and reported by,



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

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ALS Environmental

ORGANICS QUALITY CONTROL REPORT

BATCH NO: ES51721

DATE BATCH RECEIVED: 5/11/2004

CLIENT: Coffey Geosciences Pty Ltd

DATE BATCH COMPLETED: 18/11/2004

PROJECT: e12723/3

Method Code	Test	Matrix	Method Reference		QC Lot Number	Date Samples Extracted	Date Samples Analysed
			Extraction	Analysis			
EP-071	TPH(SV)	Soil	Tumbler	USEPA 8015A	NTPHT5585	11/11/04	11/11/04
EP-071/80	TPH(V)/BTEX	Soil	USEPA 5030A	USEPA 8260B	NVOCS5585	14/11/04	14/11/04
EP-074	Volatiles Scan	Soil	USEPA 5030A	USEPA 8260B	NVSCS855	08/11/04	14/11/04
EP-075SA	PAH/Phenols	Soil	Tumbler	USEPA 8270C	NEP075S-720	11/11/04	13/11/04

All analysis and laboratory QC pertaining to Environmental Site Assessments and Remedition have been conducted in accordance with Schedule (B3) NEPM Guidline on Laboratory Analysis of Potentially Contaminated Soil (December 1999). Please refer to Certificate of analysis for any exceptions to this clause.
Where applicable, internal standards are added to sample extracts prior to instrumental analysis. Absolute peak areas and retention times fall within the criteria specified in the individual methods. Continuing Calibration (CC) standards are run at the frequency of 1 in every 20 samples.

Abbreviations: SV = semivolatile, V = volatile

*: In-house methods

A Campbell Brothers Limited Company

QUALITY CONTROL REPORTS

ALS EP-071 : Total Petroleum Hydrocarbons (Semivolatile)

QC LOT No. : NTPHT5585 **Analyst:** TRANG

MATRIX: Soil **QC Schedule:** 3

CONTROL SPIKES

COMPOUND	Blank Conc	Spike Level	LCS Rec.	Control Limits Rec.	
	mg/kg	mg/kg	%	Low	High
TPH Bands					
TPH(C10 - C14)	<50	200	94	79	112
TPH(C15 - C28)	<100	200	99	84	108
TPH(C29 - C36)	<100	200	93	76	117

MATRIX SPIKES

Sample ID: ES51426-11

COMPOUND	Sample Results	Spike Level	MS Rec.	Control Limits Rec.	
	mg/kg	mg/kg	%	Low	High
TPH Bands					
TPH(C10 - C14)	<50	594	104	70	112
TPH(C15 - C28)	<100	2870	108	70	108
TPH(C29 - C36)	<100	2630	113	70	117

DUPLICATE 1

Sample ID: ES51426-10

COMPOUND	LOR	Original	Duplicate	RPD	
	mg/kg	mg/kg	mg/kg	RPD	Cont. Limit
				%	
TPH Bands					
TPH(C10 - C14)	50	<50	<50	n/a	No Limit
TPH(C15 - C28)	100	<100	<100	n/a	No Limit
TPH(C29 - C36)	100	<100	<100	n/a	No Limit

DUPLICATE 2

Sample ID: ES51426-11

COMPOUND	LOR	Original	Duplicate	RPD	
	mg/kg	mg/kg	mg/kg	RPD	Cont. Limit
				%	
TPH Bands					
TPH(C10 - C14)	50	<50	<50	n/a	No Limit
TPH(C15 - C28)	100	<100	<100	n/a	No Limit
TPH(C29 - C36)	100	<100	<100	n/a	No Limit

Notes:

1) The recovery control limits for control spikes are based on ALS laboratory statistical data. (Method QWI-ORG/07)
2) The control limits on RPD (relative percent deviation) for control spikes are fixed.
3) * : Recovery or RPD falls outside of the recommended control limits.
4) No control limits are applied to matrix spike recoveries due to the diversity of matrix types
5)The permitted range for RPD for duplicates specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

- LOR to10x LOR - no limit
- 10x LOR to20x LOR - 50%
- >20x LOR - 20%

QU CONTROL REPORTS

ALS EP-071/80 : Total Petroleum Hydrocarbons (Volatile)/BTEX

QC LOT No. : NVOCS5585 **Analyst:** Lan Nguyen

MATRIX: Soil **QC Schedule:** 3

CONTROL SPIKES

COMPOUND	Blank Conc	Spike Level	SPIKE QC RESULTS SCS Rec.	DCS Rec.	Average Rec.	RPD	Control Limits Rec. Low	Rec. High	RPD
	mg/kg	mg/kg	%		%	%			%
EP-071 TPH(V)									
TPH(C6 - C9)	<2	52	97	96	96.5	1	87.2	114	0 - 20
EP-080 BTEX									
Benzene	<0.2	2	93	95	94	2.1	90	111	0 - 20
Toluene	<0.2	2	106	98	102	7.8	87	116	0 - 20
Chlorobenzene	<0.2	2	108	102	105	5.7	94	109	0 - 20
Ethyl benzene	<0.2	2	106	104	105	1.9	85.5	117	0 - 20
m- & p-Xylene	<0.2	2	107	105	106	1.9	88.2	114	0 - 20
o-Xylene	<0.2	2	100	101	100	1	91.6	112	0 - 20
EP-080S Surrogates									
1,2 Dichloroethane-D4	107	10	99	112	106	12.3	79.6	119	0 - 20
Toluene-D8	110	10	103	114	108	10.1	79.6	116	0 - 20
4-Bromofluorobenzene	98	10	100	100	100	0	80.5	115	0 - 20

DUPLICATE 1

Sample ID: ES51426-10

COMPOUND	LOR	Original	Duplicate	RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-071 TPH(V)					
TPH(C6 - C9)	2	<2	<2	n/a	No Limit
EP-080 BTEX					
Benzene	0.2	<0.2	<0.2	n/a	No Limit
Toluene	0.2	<0.2	<0.2	n/a	No Limit
Chlorobenzene	0.2	<0.2	<0.2	n/a	No Limit
Ethyl benzene	0.2	<0.2	<0.2	n/a	No Limit
m- & p-Xylene	0.2	<0.2	<0.2	n/a	No Limit
o-Xylene	0.2	<0.2	<0.2	n/a	No Limit
EP-080S Surrogates					
1,2 Dichloroethane-D4	0.5	114	106	7.3	0 - 20
Toluene-D8	0.5	105	102	2.9	0 - 20
4-Bromofluorobenzene	0.5	106	104	1.9	0 - 20

MATRIX SPIKES

Sample ID: ES51426-11

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS MS Rec.	MSD Rec.	Average Rec.	RPD	Control Limits Rec. Low	Rec. High	RPD
	mg/kg	mg/kg	%	%	%	%			%
TPH Bands									
TPH(C6 - C9)	<2	50	106	107	106	0.9	70	114	0 - 35
EP-080 BTEX									
Benzene	<0.2	5	99	95	97	4.1	70	111	0 - 35
Toluene	<0.2	5	104	94	99	10.1	70	116	0 - 35
Chlorobenzene	<0.2	5	100	97	98.5	3	70	109	0 - 35
Ethyl benzene	<0.2	5	99	104	102	4.9	70	117	0 - 35
m- & p-Xylene	<0.2	5	96	104	100	8	70	114	0 - 35
o-Xylene	<0.2	5	92	94	93	2.2	70	112	0 - 35
EP-080S Surrogates									
1,2 Dichloroethane-D4	97.7	10	105	104	104	1	70	119	0 - 35
Toluene-D8	106	10	117	115	116	1.7	70	116	0 - 35
4-Bromofluorobenzene	108	10	117	103	110	12.7	70	115	0 - 35

DUPLICATE 2

Sample ID: ES51426-11

COMPOUND	LOR	Original	Duplicate	RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
TPH Bands					
TPH(C6 - C9)	2	<2	<2	n/a	No Limit
EP-080 BTEX					
Benzene	0.2	<0.2	<0.2	n/a	No Limit
Toluene	0.2	<0.2	<0.2	n/a	No Limit
Chlorobenzene	0.2	<0.2	<0.2	n/a	No Limit
Ethyl benzene	0.2	<0.2	<0.2	n/a	No Limit
m- & p-Xylene	0.2	<0.2	<0.2	n/a	No Limit
o-Xylene	0.2	<0.2	<0.2	n/a	No Limit
EP-080S Surrogates					
1,2 Dichloroethane-D4	0.5	97.7	90.8	7.3	0 - 20
Toluene-D8	0.5	106	98.6	7.2	0 - 20
4-Bromofluorobenzene	0.5	108	108	0	0 - 20

Notes:

1) The recovery control limits for control spikes are based on ALS laboratory statistical data. (Method QWI-ORG/07). 80% of the analytes must fall within the control limits.
2) The control limits on RPD (relative percent deviation) for control spikes are fixed <20%.
3) * : Recovery or RPD falls outside of the recommended control limits.
4) No control limits are applied to matrix spike recoveries due to the diversity of matrix types
5)The permitted range for RPD for duplicates specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

- LOR to10x LOR - no limit
- 10x LOR to20x LOR - 50%
- >20x LOR - 20%

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855 ANALYST GA

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP-074A-SS : Monocyclic Aromatics									
Benzene	<LOR	1.0	99.7	97.7	98.7	2.03	84.2	117	0 - 20
Toluene	<LOR	1.0	99.7	98.6	99.2	1.11	85.9	119	0 - 20
Ethylbenzene	<LOR	1.0	99.9	99.9	99.9	0	84.5	111	0 - 20
m & p-Xylene	<LOR	2.0	101	98	99.5	3.02	85.6	113	0 - 20
Styrene	<LOR	1.0	101	98.9	100	2.1	79.8	117	0 - 20
o-Xylene	<LOR	1.0	100	99.8	99.9	0.2	87.9	113	0 - 20
Isopropylbenzene	<LOR	1.0	100	99.4	99.7	0.6	87.4	113	0 - 20
n-Propylbenzene	<LOR	1.0	101	102	102	0.99	83.5	115	0 - 20
1,3,5-Trimethylbenzene	<LOR	1.0	102	102	102	0	88	111	0 - 20
sec-Butylbenzene	<LOR	1.0	102	101	102	0.99	89.1	112	0 - 20
1,2,4-Trimethylbenzene	<LOR	1.0	103	102	103	0.98	86	112	0 - 20
tert-Butylbenzene	<LOR	1.0	103	101	102	1.96	92.1	110	0 - 20
p-Isopropyltoluene	<LOR	1.0	103	103	103	0	88.3	111	0 - 20
n-Butylbenzene	<LOR	1.0	102	101	102	0.99	89.4	110	0 - 20
EP-074B-SS : Oxygenated Compounds									
2-Propanone(Acetone)	<LOR	10.0	96.7	95	95.9	1.77	86.6	112	0 - 20
Vinyl acetate	<LOR	10.0	95	98.9	97	4.02	60.9	129	0 - 20
2-Butanone (MEK)	<LOR	10.0	91.8	98.1	95	6.64	77.2	120	0 - 20
4-Methyl-2-pentanone (MIBK	<LOR	10.0	97.4	95.3	96.4	2.18	75.8	120	0 - 20
2-Hexanone (MBK)	<LOR	10.0	98.6	99.6	99.1	1.01	78.9	118	0 - 20
EP-074C-SS : Sulfonated Compounds									
Carbondisulfide	<LOR	1.0	99.4	95.4	97.4	4.11	84.2	112	0 - 20
EP-07D-SS : Fumigants									
2,2-Dichloropropane	<LOR	1.0	81.9	98.8	90.4	18.7	70.7	117	0 - 20
1,2-Dichloropropane	<LOR	1.0	101	98.9	100	2.1	81.2	116	0 - 20
cis-1,3-Dichloropropene	<LOR	2.0	96.7	98.2	97.5	1.54	79.8	116	0 - 20
trans-1,3-Dichloropropene	<LOR	2.0	94.5	98.9	96.7	4.55	84.4	113	0 - 20
1,2-Dibromoethane	<LOR	1.0	101	97.9	99.5	3.12	78.9	121	0 - 20

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855 ANALYST GA

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP.074E.SS: Chlorinated Aliphatic Compounds									
Dichlorodifluoromethane	<LOR	10.0	96.4	92.7	94.6	3.91	64.1	129	0 - 20
Chloromethane	<LOR	10.0	101	95.8	98.4	5.28	76.4	120	0 - 20
Vinyl chloride	<LOR	10.0	102	97	99.5	5.03	76.5	119	0 - 20
Bromomethane	<LOR	10.0	97	106	102	8.87	63.3	135	0 - 20
Chloroethane	<LOR	10.0	100	95.9	98	4.19	80.4	123	0 - 20
Trichlorofluoromethane	<LOR	10.0	101	95	98	6.12	81.5	122	0 - 20
1,1-Dichloroethene	<LOR	1.0	103	97.6	100	5.38	87.2	114	0 - 20
Iodomethane	<LOR	1.0	94.1	98.1	96.1	4.16	70.8	129	0 - 20
Methylene chloride	<LOR	1.0	99.9	97.4	98.7	2.53	89.8	118	0 - 20
trans-1,2-Dichloroethene	<LOR	1.0	100	98.2	99.1	1.82	90	107	0 - 20
1,1-Dichloroethane	<LOR	1.0	108	104	106	3.77	83	116	0 - 20
cis-1,2-Dichloroethene	<LOR	1.0	92.8	92.1	92.5	0.76	82.7	117	0 - 20
1,1,1-Trichloroethane	<LOR	1.0	98.9	101	100	2.1	81	114	0 - 20
1,1-Dichloropropylene	<LOR	1.0	105	102	104	2.9	84.5	112	0 - 20
Carbon tetrachloride	<LOR	1.0	85.2	96	90.6	11.9	81.6	114	0 - 20
1,2-Dichloroethane	<LOR	1.0	98.1	96	97.1	2.16	84.6	116	0 - 20
Trichloroethene	<LOR	1.0	104	101	103	2.93	86.2	115	0 - 20
Dibromomethane	<LOR	1.0	94.5	96.9	95.7	2.51	83.2	118	0 - 20
1,1,2-Trichloroethane	<LOR	1.0	98.9	95.3	97.1	3.71	83.9	118	0 - 20
1,3-Dichloropropane	<LOR	1.0	98.9	98.7	98.8	0.2	83.1	120	0 - 20
Tetrachloroethene	<LOR	1.0	101	99	100	2	93.3	122	0 - 20
1,1,1,2-Tetrachloroethane	<LOR	1.0	98.1	99.2	98.7	1.12	87	111	0 - 20
trans-1,4-Dichloro-2-butene	<LOR	1.0	92.6	105	98.8	12.6	75.1	113	0 - 20
cis-1,4-Dichloro-2-butene	<LOR	1.0	97.6	102	99.8	4.41	80.1	108	0 - 20
1,1,2,2-Tetrachloroethane	<LOR	1.0	96.5	98	97.3	1.54	82	115	0 - 20
1,2,3-Trichloropropane	<LOR	1.0	97.4	97.1	97.3	0.31	79.4	116	0 - 20
Pentachloroethane	<LOR	1.0	98.5	102	100	3.49	30.4	120	0 - 20
1,2-Dibromo-3-chloropropan	<LOR	1.0	97.7	102	99.9	4.31	73.5	116	0 - 20
Hexachlorobutadiene	<LOR	1.0	105	103	104	1.92	66.5	124	0 - 20

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855 ANALYST GA

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP-074F-SS : Chlorinated Aromatic Compounds									
Chlorobenzene	<LOR	1.0	101	100	101	1	88.7	110	0 - 20
Bromobenzene	<LOR	1.0	102	101	102	0.99	86.9	112	0 - 20
2-Chlorotoluene	<LOR	1.0	103	102	103	0.98	89.5	111	0 - 20
4-Chlorotoluene	<LOR	1.0	102	101	102	0.99	86	112	0 - 20
1,3-Dichlorobenzene	<LOR	1.0	102	102	102	0	91.1	108	0 - 20
1,4-Dichlorobenzene	<LOR	1.0	102	102	102	0	86.5	112	0 - 20
1,2-Dichlorobenzene	<LOR	1.0	101	100	101	1	89.9	109	0 - 20
1,2,4-Trichlorobenzene	<LOR	1.0	99.9	103	101	3.06	81.5	113	0 - 20
1,2,3-Trichlorobenzene	<LOR	1.0	101	103	102	1.96	84.2	112	0 - 20
EP-074G-SS : Trihalomethanes									
Chloroform	<LOR	1.0	101	98.4	99.7	2.61	86.7	115	0 - 20
Bromodichloromethane	<LOR	1.0	98.9	100	99.5	1.11	86.6	113	0 - 20
Dibromochloromethane	<LOR	1.0	101	99.6	100	1.4	78	120	0 - 20
Bromoform	<LOR	1.0	99.4	97.7	98.6	1.73	81.1	116	0 - 20
EP-074H-SS : PAH									
Naphthalene	<LOR	1.0	101	109	105	7.62	81.5	117	0 - 20
EP-074J-SS : Nitrogenated Compounds									
Acrylonitrile	--	1.0	--	--	n/a	n/a	0	100	0 - 20
EP-074S-SS : Surrogates									
1,2-Dichloroethane-d4	97.9%	5.0	98.3	97.7	98	0.61	80	120	0 - 20
Toluene-d8	101%	5.0	100	99.7	99.9	0.3	81	117	0 - 20
4-Bromofluorobenzene	97%	5.0	98.7	97.4	98.1	1.33	74	121	0 - 20

COMMENTS:

1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)

2) The control limits on RPD (relative percent deviation) are fixed.

3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS ES51429 27	QC DUPLICATE RESULTS ES51429 27D	RPD RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-074A-SS : Monocyclic Aromatics					
Benzene	0.5	<LOR	<LOR	n/a	
Toluene	0.5	<LOR	<LOR	n/a	
Ethylbenzene	0.5	<LOR	<LOR	n/a	
m & p-Xylene	0.5	<LOR	<LOR	n/a	
Styrene	0.5	<LOR	<LOR	n/a	
o-Xylene	0.5	<LOR	<LOR	n/a	
Isopropylbenzene	0.5	<LOR	<LOR	n/a	
n-Propylbenzene	0.5	<LOR	<LOR	n/a	
1,3,5-Trimethylbenzene	0.5	<LOR	<LOR	n/a	
sec-Butylbenzene	0.5	<LOR	<LOR	n/a	
1,2,4-Trimethylbenzene	0.5	<LOR	<LOR	n/a	
tert-Butylbenzene	0.5	<LOR	<LOR	n/a	
p-Isopropyltoluene	0.5	<LOR	<LOR	n/a	
n-Butylbenzene	0.5	<LOR	<LOR	n/a	
EP-074B-SS : Oxygenated Compounds					
2-Propanone(Acetone)	5	<LOR	<LOR	n/a	
Vinyl acetate	5	<LOR	<LOR	n/a	
2-Butanone (MEK)	5	<LOR	<LOR	n/a	
4-Methyl-2-pentanone (MIBK)	5	<LOR	<LOR	n/a	
2-Hexanone (MBK)	5	<LOR	<LOR	n/a	
EP-074C-SS : Sulfonated Compounds					
Carbondisulfide	0.5	<LOR	<LOR	n/a	
EP-074D-SS : Fumigants					
2,2-Dichloropropane	0.5	<LOR	<LOR	n/a	
1,2-Dichloropropane	0.5	<LOR	<LOR	n/a	
cis-1,3-Dichloropropene	1	<LOR	<LOR	n/a	
trans-1,3-Dichloropropene	1	<LOR	<LOR	n/a	
1,2-Dibromoethane	0.5	<LOR	<LOR	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-074-ESS : Chlorinated Aliphatic Compounds					
Dichlorodifluoromethane	5	<LOR	<LOR	n/a	
Chloromethane	5	<LOR	<LOR	n/a	
Vinyl chloride	5	<LOR	<LOR	n/a	
Bromomethane	5	<LOR	<LOR	n/a	
Chloroethane	5	<LOR	<LOR	n/a	
Trichlorofluoromethane	5	<LOR	<LOR	n/a	
1,1-Dichloroethene	0.5	<LOR	<LOR	n/a	
Iodomethane	0.5	<LOR	<LOR	n/a	
Methylene chloride	0.5	<LOR	<LOR	n/a	
trans-1,2-Dichloroethene	0.5	<LOR	<LOR	n/a	
1,1-Dichloroethane	0.5	<LOR	<LOR	n/a	
cis-1,2-Dichloroethene	0.5	<LOR	<LOR	n/a	
1,1,1-Trichloroethane	0.5	<LOR	<LOR	n/a	
1,1-Dichloropropylene	0.5	<LOR	<LOR	n/a	
Carbon tetrachloride	0.5	<LOR	<LOR	n/a	
1,2-Dichloroethane	0.5	<LOR	<LOR	n/a	
Trichloroethene	0.5	<LOR	<LOR	n/a	
Dibromomethane	0.5	<LOR	<LOR	n/a	
1,1,2-Trichloroethane	0.5	<LOR	<LOR	n/a	
1,3-Dichloropropane	0.5	<LOR	<LOR	n/a	
Tetrachloroethene	0.5	<LOR	<LOR	n/a	
1,1,1,2-Tetrachloroethane	0.5	<LOR	<LOR	n/a	
trans-1,4-Dichloro-2-butene	0.5	<LOR	<LOR	n/a	
cis-1,4-Dichloro-2-butene	0.5	<LOR	<LOR	n/a	
1,1,2,2-Tetrachloroethane	0.5	<LOR	<LOR	n/a	
1,2,3-Trichloropropane	0.5	<LOR	<LOR	n/a	
Pentachloroethane	0.5	<LOR	<LOR	n/a	
1,2-Dibromo-3-chloropropane	0.5	<LOR	<LOR	n/a	
Hexachlorobutadiene	0.5	<LOR	<LOR	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP074F-SS: Chlorinated Aromatic Compounds					
Chlorobenzene	0.5	<LOR	<LOR	n/a	
Bromobenzene	0.5	<LOR	<LOR	n/a	
2-Chlorotoluene	0.5	<LOR	<LOR	n/a	
4-Chlorotoluene	0.5	<LOR	<LOR	n/a	
1,3-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,4-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2,4-Trichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2,3-Trichlorobenzene	0.5	<LOR	<LOR	n/a	
EP074G-SS: Trihalomethanes					
Chloroform	0.5	<LOR	<LOR	n/a	
Bromodichloromethane	0.5	<LOR	<LOR	n/a	
Dibromochloromethane	0.5	<LOR	<LOR	n/a	
Bromoform	0.5	<LOR	<LOR	n/a	
EP074H-SS: PAH					
Naphthalene	5	<LOR	<LOR	n/a	
EP074J-SS: Nitrogenated Compounds					
Acrylonitrile	--	--	--	n/a	
EP074S-SS: Surrogates					
1,2-Dichloroethane-d4	1%	96.9%	86%	11.9	0 - 20
Toluene-d8	1%	81.4%	92.7%	13	0 - 20
4-Bromofluorobenzene	1%	93.1%	96.7%	3.79	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS ES51429 28	ES51429 28D	RPD RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-074A-SS : Monocyclic Aromatics					
Benzene	0.5	<LOR	<LOR	n/a	
Toluene	0.5	<LOR	<LOR	n/a	
Ethylbenzene	0.5	<LOR	<LOR	n/a	
m & p-Xylene	0.5	<LOR	<LOR	n/a	
Styrene	0.5	<LOR	<LOR	n/a	
o-Xylene	0.5	<LOR	<LOR	n/a	
Isopropylbenzene	0.5	<LOR	<LOR	n/a	
n-Propylbenzene	0.5	<LOR	<LOR	n/a	
1,3,5-Trimethylbenzene	0.5	<LOR	<LOR	n/a	
sec-Butylbenzene	0.5	<LOR	<LOR	n/a	
1,2,4-Trimethylbenzene	0.5	<LOR	<LOR	n/a	
tert-Butylbenzene	0.5	<LOR	<LOR	n/a	
p-Isopropyltoluene	0.5	<LOR	<LOR	n/a	
n-Butylbenzene	0.5	<LOR	<LOR	n/a	
EP-074B-SS : Oxygenated Compounds					
2-Propanone(Acetone)	5	<LOR	<LOR	n/a	
Vinyl acetate	5	<LOR	<LOR	n/a	
2-Butanone (MEK)	5	<LOR	<LOR	n/a	
4-Methyl-2-pentanone (MIBK)	5	<LOR	<LOR	n/a	
2-Hexanone (MBK)	5	<LOR	<LOR	n/a	
EP-074C-SS : Sulfonated Compounds					
Carbondisulfide	0.5	<LOR	<LOR	n/a	
EP-07D-SS : Fumigants					
2,2-Dichloropropane	0.5	<LOR	<LOR	n/a	
1,2-Dichloropropane	0.5	<LOR	<LOR	n/a	
cis-1,3-Dichloropropene	1	<LOR	<LOR	n/a	
trans-1,3-Dichloropropene	1	<LOR	<LOR	n/a	
1,2-Dibromoethane	0.5	<LOR	<LOR	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429	**ES51429**		
		28	28D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-074-ES5 : Chlorinated Aliphatic Compounds					
Dichlorodifluoromethane	5	<LOR	<LOR	n/a	
Chloromethane	5	<LOR	<LOR	n/a	
Vinyl chloride	5	<LOR	<LOR	n/a	
Bromomethane	5	<LOR	<LOR	n/a	
Chloroethane	5	<LOR	<LOR	n/a	
Trichlorofluoromethane	5	<LOR	<LOR	n/a	
1,1-Dichloroethene	0.5	<LOR	<LOR	n/a	
Iodomethane	0.5	<LOR	<LOR	n/a	
Methylene chloride	0.5	<LOR	<LOR	n/a	
trans-1,2-Dichloroethene	0.5	<LOR	<LOR	n/a	
1,1-Dichloroethane	0.5	<LOR	<LOR	n/a	
cis-1,2-Dichloroethene	0.5	<LOR	<LOR	n/a	
1,1,1-Trichloroethane	0.5	<LOR	<LOR	n/a	
1,1-Dichloropropylene	0.5	<LOR	<LOR	n/a	
Carbon tetrachloride	0.5	<LOR	<LOR	n/a	
1,2-Dichloroethane	0.5	<LOR	<LOR	n/a	
Trichloroethene	0.5	<LOR	<LOR	n/a	
Dibromomethane	0.5	<LOR	<LOR	n/a	
1,1,2-Trichloroethane	0.5	<LOR	<LOR	n/a	
1,3-Dichloropropane	0.5	<LOR	<LOR	n/a	
Tetrachloroethene	0.5	<LOR	<LOR	n/a	
1,1,1,2-Tetrachloroethane	0.5	<LOR	<LOR	n/a	
trans-1,4-Dichloro-2-butene	0.5	<LOR	<LOR	n/a	
cis-1,4-Dichloro-2-butene	0.5	<LOR	<LOR	n/a	
1,1,2,2-Tetrachloroethane	0.5	<LOR	<LOR	n/a	
1,2,3-Trichloropropane	0.5	<LOR	<LOR	n/a	
Pentachloroethane	0.5	<LOR	<LOR	n/a	
1,2-Dibromo-3-chloropropane	0.5	<LOR	<LOR	n/a	
Hexachlorobutadiene	0.5	<LOR	<LOR	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS855
MATRIX : Soils
ANALYST: GA

COMPOUND	LOR	QC DUPLICATE RESULTS ES51429 28	ES51429 28D	RPD RPD	RPD Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-074F-SS : Chlorinated Aromatic Compounds					
Chlorobenzene	0.5	<LOR	<LOR	n/a	
Bromobenzene	0.5	<LOR	<LOR	n/a	
2-Chlorotoluene	0.5	<LOR	<LOR	n/a	
4-Chlorotoluene	0.5	<LOR	<LOR	n/a	
1,3-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,4-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2-Dichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2,4-Trichlorobenzene	0.5	<LOR	<LOR	n/a	
1,2,3-Trichlorobenzene	0.5	<LOR	<LOR	n/a	
EP-074G-SS : Trihalomethanes					
Chloroform	0.5	<LOR	<LOR	n/a	
Bromodichloromethane	0.5	<LOR	<LOR	n/a	
Dibromochloromethane	0.5	<LOR	<LOR	n/a	
Bromoform	0.5	<LOR	<LOR	n/a	
EP-074H-SS : PAH					
Naphthalene	5	<LOR	<LOR	n/a	
EP-074J-SS : Nitrogenated Compounds					
Acrylonitrile	--	--	--	n/a	
EP-074S-SS : Surrogates					
1,2-Dichloroethane-d4	1%	117%	80.5%	37	0 - 20
Toluene-d8	1%	114%	110%	3.57	0 - 20
4-Bromofluorobenzene	1%	104%	94.5%	9.57	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- MATRIX SPIKE/DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. :	NVSCS855	ANALYST :	GA
MATRIX:	Soils	Sample ID:	ES51429-27

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS				Cont. Limit
			MS Rec.	MSD Rec.	Average Rec.	RPD	RPD
	mg/kg	mg/kg	%	%	%	%	%
EP-074A-SS : Monocyclic Aromatics							
Benzene	<LOR	2.5	101	88.6	94.8	13.1	0 - 35
Toluene	<LOR	2.5	85.1	85.3	85.2	0.235	0 - 35
EP-074E-SS : Chlorinated Aliphatic Compounds							
1,1-Dichloroethene	<LOR	2.5	94.6	81.1	87.9	15.4	0 - 35
Trichloroethene	<LOR	2.5	89.4	94.1	91.8	5.12	0 - 35
EP-074F-SS : Chlorinated Aromatic Compounds							
Chlorobenzene	<LOR	2.5	81.5	81.8	81.7	0.367	0 - 35
EP-074S-SS : Surrogates							
1,2-Dichloroethane-d4	96.9%	5	109	114	112	4.48	0 - 35
Toluene-d8	81.4%	5	102	114	108	11.1	0 - 35
4-Bromofluorobenzene	93.1%	5	92.4	97.8	95.1	5.68	0 - 35

COMMENTS:

1) The RPD control limits are fixed.

2) *: RPD falls outside the recommended control limit.

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST M.TAN

MATRIX: Soils

	Blank	Spike	SPIKE QC RESULTS				Control Limits		
	Conc	Level	SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP-075A-SA : PHENOLS									
Phenol	<0.25	0.1	97.2	101	99.1	3.83	71	119	0 - 35
2-Chlorophenol	<0.25	0.1	99.4	98.1	98.8	1.32	85.5	105	0 - 35
2-Methylphenol	<0.25	0.1	89.5	95.6	92.6	6.59	73.3	106	0 - 35
3&4-Methylphenol	<0.5	0.2	106	104	105	1.9	68.4	111	0 - 35
2-Nitrophenol	<0.25	0.1	84.9	99.4	92.2	15.7	59.6	119	0 - 35
2,4-Dimethylphenol	<0.25	0.1	89	87.9	88.5	1.24	78.5	105	0 - 35
2,4-Dichlorophenol	<0.25	0.1	94	89	91.5	5.46	72.6	112	0 - 35
2,6-Dichlorophenol	<0.25	0.1	100	98.5	99.3	1.51	78.5	110	0 - 35
4-Chloro-3-methylphenol	<0.25	0.1	101	97.8	99.4	3.22	76.9	106	0 - 35
2,4,6-Trichlorophenol	<0.25	0.1	88.2	83.4	85.8	5.59	67.4	110	0 - 35
2,4,5-Trichlorophenol	<0.25	0.1	94.2	89.3	91.8	5.34	72.5	113	0 - 35
Pentachlorophenol	<0.5	0.2	57.1	55.7	56.4	2.48	23.1	111	0 - 35
EP-075B-SA : POLYAROMATIC HYDROCARBONS									
Naphthalene	<0.25	0.1	97	102	99.5	5.03	86.8	103	0 - 35
Acenaphthylene	<0.25	0.1	102	97.4	99.7	4.61	84.8	107	0 - 35
Acenaphthene	<0.25	0.1	98.4	97.4	97.9	1.02	87.3	105	0 - 35
Fluorene	<0.25	0.1	101	97.4	99.2	3.63	85	105	0 - 35
Phenanthrene	<0.25	0.1	90	89.3	89.7	0.78	84.5	113	0 - 35
Anthracene	<0.25	0.1	93.8	96.8	95.3	3.15	87.8	107	0 - 35
Fluoranthene	<0.25	0.1	96.3	97.7	97	1.44	87.4	105	0 - 35
Pyrene	<0.25	0.1	93	97.6	95.3	4.83	75	105	0 - 35
Benz(a)anthracene	<0.25	0.1	102	95.7	98.9	6.37	85.1	100	0 - 35
Chrysene	<0.25	0.1	99	97	98	2.04	84	111	0 - 35
Benzo(b)fluoranthene	<0.25	0.1	97	94.8	95.9	2.29	68.2	112	0 - 35
Benzo(k)fluoranthene	<0.25	0.1	98.3	96.6	97.5	1.74	69.9	129	0 - 35
Benzo(a)pyrene	<0.25	0.1	98.7	99.8	99.3	1.11	82.5	108	0 - 35
Indeno(1,2,3-cd)pyrene	<0.25	0.1	98.3	95.2	96.8	3.2	75.6	110	0 - 35
Dibenz(a,h)anthracene	<0.25	0.1	96.8	93.2	95	3.79	76.5	107	0 - 35
Benzo(g,h,i)perylene	<0.25	0.1	101	99.2	100	1.8	76.1	109	0 - 35

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST M.TAN

MATRIX: Soils

	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Rec.	DCS Rec.	Average Rec.	RPD	Rec.		RPD
COMPOUND	mg/kg	mg/kg	%		%	%	Low	High	%
EP-075S-AS : ACID EXTRACTABLE SURROGATES									
2-Fluorophenol	102%	0.2	91.3	109	100	17.7	40.6	144	0 - 35
Phenol-d6	96%	0.2	103	96.7	99.9	6.31	68.8	125	0 - 35
2-Chlorophenol-d4	89.6%	0.2	96.7	91.2	94	5.85	71.8	117	0 - 35
2,4,6-Tribromophenol	67.6%	0.2	83.8	79.6	81.7 *	5.14	81.9	117	0 - 35
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES									
2-Fluorobiphenyl	94.4%	0.2	107	102	105	4.78	75.4	115	0 - 35
Anthracene-d10	91.4%	0.2	102	99.7	101	2.28	72.9	121	0 - 35
4-Terphenyl-d14	91.6%	0.2	102	97.4	99.7	4.61	67.2	112	0 - 35

COMMENTS:

1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)

2) The control limits on RPD (relative percent deviation) are fixed.

3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075A-SA : PHENOLS					
Phenol	0.5	<0.25	<0.25	n/a	
2-Chlorophenol	0.5	<0.25	<0.25	n/a	
2-Methylphenol	0.5	<0.25	<0.25	n/a	
3&4-Methylphenol	1	<0.5	<0.5	n/a	
2-Nitrophenol	0.5	<0.25	<0.25	n/a	
2,4-Dimethylphenol	0.5	<0.25	<0.25	n/a	
2,4-Dichlorophenol	0.5	<0.25	<0.25	n/a	
2,6-Dichlorophenol	0.5	<0.25	<0.25	n/a	
4-Chloro-3-methylphenol	0.5	<0.25	<0.25	n/a	
2,4,6-Trichlorophenol	0.5	<0.25	<0.25	n/a	
2,4,5-Trichlorophenol	0.5	<0.25	<0.25	n/a	
Pentachlorophenol	1	<0.5	<0.5	n/a	
EP-075B-SA : POLYNUCLEAR AROMATIC HYDROCARBONS					
Naphthalene	0.5	<0.25	<0.25	n/a	
Acenaphthylene	0.5	<0.25	<0.25	n/a	
Acenaphthene	0.5	<0.25	<0.25	n/a	
Fluorene	0.5	<0.25	<0.25	n/a	
Phenanthrene	0.5	<0.25	0.254	1.59	No limit
Anthracene	0.5	<0.25	<0.25	n/a	
Fluoranthene	0.5	0.709	0.77	8.25	No limit
Pyrene	0.5	0.728	0.779	6.77	No limit
Benz(a)anthracene	0.5	0.41	0.471	13.8	No limit
Chrysene	0.5	0.315	0.333	5.56	No limit
Benzo(b)&(k)fluoranthene	0.5	0.467	0.472	1.06	No limit
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(a)pyrene	0.5	0.392	0.407	3.75	No limit
Indeno(1,2,3-cd)pyrene	0.5	<0.25	<0.25	n/a	
Dibenz(a,h)anthracene	0.5	<0.25	<0.25	n/a	
Benzo(g,h,i)perylene	0.5	<0.25	<0.25	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 27	**ES51429** 27D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075S-AS : ACID EXTRACTABLE SURROGATES					
2-Fluorophenol	1%	87.8%	84.5%	3.83	0 - 20
Phenol-d6	1%	101%	104%	2.93	0 - 20
2-Chlorophenol-d4	1%	89.2%	96.3%	7.65	0 - 20
2,4,6-Tribromophenol	1%	83.6%	88.7%	5.92	0 - 20
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES					
2-Fluorobiphenyl	1%	91.5%	98.9%	7.77	0 - 20
Anthracene-d10	1%	91.3%	97.8%	6.87	0 - 20
4-Terphenyl-d14	1%	103%	94.4%	8.71	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429	ES51429		
		28	28D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075A-SA : PHENOLS					
Phenol	0.5	<0.25	<0.25	n/a	
2-Chlorophenol	0.5	<0.25	<0.25	n/a	
2-Methylphenol	0.5	<0.25	<0.25	n/a	
3&4-Methylphenol	1	<0.5	<0.5	n/a	
2-Nitrophenol	0.5	<0.25	<0.25	n/a	
2,4-Dimethylphenol	0.5	<0.25	<0.25	n/a	
2,4-Dichlorophenol	0.5	<0.25	<0.25	n/a	
2,6-Dichlorophenol	0.5	<0.25	<0.25	n/a	
4-Chloro-3-methylphenol	0.5	<0.25	<0.25	n/a	
2,4,6-Trichlorophenol	0.5	<0.25	<0.25	n/a	
2,4,5-Trichlorophenol	0.5	<0.25	<0.25	n/a	
Pentachlorophenol	1	<0.5	<0.5	n/a	
EP-075B-SA : POLYNUCLEAR AROMATIC HYDROCARBONS					
Naphthalene	0.5	<0.25	<0.25	n/a	
Acenaphthylene	0.5	<0.25	<0.25	n/a	
Acenaphthene	0.5	<0.25	<0.25	n/a	
Fluorene	0.5	<0.25	<0.25	n/a	
Phenanthrene	0.5	<0.25	<0.25	n/a	
Anthracene	0.5	<0.25	<0.25	n/a	
Fluoranthene	0.5	<0.25	<0.25	n/a	
Pyrene	0.5	<0.25	<0.25	n/a	
Benz(a)anthracene	0.5	<0.25	<0.25	n/a	
Chrysene	0.5	<0.25	<0.25	n/a	
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(b)&(k)fluoranthene	0.5	<0.25	<0.25	n/a	
Benzo(a)pyrene	0.5	<0.25	<0.25	n/a	
Indeno(1,2,3-cd)pyrene	0.5	<0.25	<0.25	n/a	
Dibenz(a,h)anthracene	0.5	<0.25	<0.25	n/a	
Benzo(g,h,i)perylene	0.5	<0.25	<0.25	n/a	

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720
MATRIX : Soils
ANALYST: M.TAN

COMPOUND	LOR	QC DUPLICATE RESULTS		RPD	
		ES51429 28	**ES51429** 28D	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-075S-AS : ACID EXTRACTABLE SURROGATES					
2-Fluorophenol	1%	98.1%	81.9%	18	0 - 20
Phenol-d6	1%	96.2%	93.2%	3.17	0 - 20
2-Chlorophenol-d4	1%	84.7%	85.8%	1.29	0 - 20
2,4,6-Tribromophenol	1%	83.2%	85%	2.14	0 - 20
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES					
2-Fluorobiphenyl	1%	92%	87.9%	4.56	0 - 20
Anthracene-d10	1%	77.6%	86.6%	11	0 - 20
4-Terphenyl-d14	1%	101%	96.8%	4.25	0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is 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%.
Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL -- MATRIX SPIKE/DUPLICATE

ALS EP-075 : Semivolatile Organic Compounds

QC LOT No. : NEP075S720 ANALYST : M.TAN

MATRIX: Soils Sample ID: ES51429-27

COMPOUND	Sample Results	Spike Level	SPIKE QC RESULTS				Cont. Limit
			MS Rec.	MSD Rec.	Average Rec.	RPD	RPD
	mg/kg	mg/kg	%	%	%	%	%
EP-075A-SA : PHENOLS							
Phenol	<0.25	10	92.3	90.9	91.6	1.53	0 - 35
2-Chlorophenol	<0.25	10	99.8	90.8	95.3	9.44	0 - 35
2-Nitrophenol	<0.25	10	83.1	90.3	86.7	8.3	0 - 35
4-Chloro-3-methylphenol	<0.25	10	98.7	97.2	98	1.53	0 - 35
Pentachlorophenol	<0.5	10	50.2	46.9	48.6	6.8	0 - 35
EP-075B-SA : POLYAROMATIC HYDROCARBONS							
Acenaphthene	<0.25	10	97.8	92.6	95.2	5.46	0 - 35
Pyrene	0.728	10	103	104	104	0.966	0 - 35
EP-075S-AS : ACID EXTRACTABLE SURROGATES							
2-Fluorophenol	87.8%	8	90.5	76.4	83.5	16.9	0 - 35
Phenol-d6	101%	8	99.4	99.3	99.4	0.101	0 - 35
2-Chlorophenol-d4	89.2%	8	104	92.8	98.4	11.4	0 - 35
2,4,6-Tribromophenol	83.6%	8	93.3	89.8	91.6	3.82	0 - 35
EP-075T-AS : BASE/NEUTRAL EXTRACTABLE SURROGATES							
2-Fluorobiphenyl	91.5%	8	103	94.4	98.7	8.71	0 - 35
Anthracene-d10	91.3%	8	101	91.9	96.5	9.43	0 - 35
4-Terphenyl-d14	103%	8	98.8	84.3	91.6	15.8	0 - 35

COMMENTS:

1) The RPD control limits are fixed.

2) *: Recoveries or RPD's fall outside the specified limits.

No: 23628

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723|3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS	Sampled by: ANTON DELAC	Consigning Officer: Date Dispatched:
Attention:	Project Manager: (report results to) ANDREW BARWICK	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	5/11/04	3:00		5/11/04	3:00
				5/11/04	3:50pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX (MAHs)	Metals: 8	VOC	Asbestos	Sample Condition on Receipt
			SITE C								
	Soil	Glass jar + ice	(1) DUP 13	1/11/04	✓	✓	✓	✓	✓	✓	
			↓ 1x150ml soil jar								
			S-844								

Batch No.: ☑ ORG
85197.1
Batched date: 05/11/4
☑ Soil ☐ Ambient
☐ Water ☑ Chilled
☐ Other ___ °C
☐ Subcontract Work
☐ Bottle Return
☐ Imm. Anal. Actioned

SUBCONTRACT WORK
BACTO ASET
Asbestos
1xSoil jar

Special Laboratory Instructions:

Detection Limits: Turnaround Required:

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

20053111-01

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164
Locked Bag 106 Wetherill Park BC 1851
Phone: 61-2-8784 8555 **Fax: 61-2-8784 8500** Website: www.alsenviro.com

ALS Environmental

Inter Lab Site

COC RETURN HEADER SHEET

ATTENTION Andrew Barwick FAX NO. (02) 9911-1001

COMPANY Coffey DATE 05/11/4

CC No OF PAGES 2

FROM **Sample Receipt – ALS SYDNEY** Say Steph

SUBJECT **Signed COC follows.**

Please find attached signed copies of your COC including the following information:

Your Project ID: E12723/3

ALS Batch No.: ES5172/

Date / Time Samples Received at ALS: 05/11/4 3.50pm

B. Sample Condition Report and Due date for reporting will be provided on your Sample Receipt Advice (to follow). If you do not receive your Sample Receipt Advice within 24 hours of this notification, please contact the laboratory immediately.

This facsimile message contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action in respect of its contents. If you have received this facsimile in error, please notify ALS immediately and return it to the above fax.

A Campbell Brothers Limited Company

No: 23628

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12728|3

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS	Sampled by: ANTON DELAC	Consigning Officer: / Date Dispatched:
Attention:	Project Manager: (report results to) ANDREW BARWICK	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	5/11/04	3:00		5/11/04	3:00
				5/11/04	3:50pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	*MAHs (BTEX)	Metals: 8	VOC	Asbestos	Sample Condition on Receipt
	Soil	Glass jar + ice	(1) DUP 13	1|11|04	✓	✓	✓	✓	✓	✓	
			↓ 1x150ml soil jar								
			S-844								

Analyses Required

Batch No: ☑ ORG
85197A1
Batched date: 05/11/04
☑ Soil ☐ Ambient
☐ Water ☑ Chilled
☐ Other °C
☐ Subcontract Work
☐ Bottle Return
☐ Imm. Anal. Actioned

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

20053/3/01-11/05/03

05-11-04 18:55 ; 612 93645272 # 2/ 2

No: 23628

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723|3 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS	Sampled by: ANTON DELAC	Consigning Officer: / Date Dispatched:
Attention:	Project Manager: (report results to) ANDREW BARWICK	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	5/11/04	3.00		5/11/04	3.00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	~~MAHs~~ BTEX	Metals: 8	VOC	Asbestos	Sample Condition on Receipt
CBH62 0.2-0.3	SOIL	Glass Jar + ice	DUP 13	1/11/04	✓	✓	✓	✓	✓	✓	

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

20053/11-01

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

APPENDIX E2

LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

PHASE 2 INVESTIGATION MARCH 2005

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0951
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	17
Reference/Order	:	E12723/4/30606
Project	:	E12723/4 AREA B
Received Samples	:	11/03/05
Instructions	:	17/03/05
Date Reported	:	24/03/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0951

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	18/03/05	19/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	18/03/05	22/03/05	GTO	094
E1221	TPH (C10-C36)	18/03/05	19/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	18/03/05	22/03/05	GTO	094
E5910	Metals by ICP-AES	23/03/05	23/03/05	DLU	093
E5950	Mercury in Soil	22/03/05	22/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	18/03/05	19/03/05	MFA	095
E1290	Volatile Organic Compounds	18/03/05	19/03/05	GTO	094
E1080	Organochlorine Pesticides	18/03/05	19/03/05	MFA	095
E1090	Organophosphorus Pesticides	18/03/05	19/03/05	MFA	095
E0230	TPH C6-C9 by purge & trap	18/03/05	18/03/05	GTO	094
E0221F	TPH (C10-C36)	18/03/05	19/03/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	18/03/05	18/03/05	GTO	094
E4970	Total Metals by ICP-MS	18/03/05	18/03/05	DLU	093
E4950	Mercury	18/03/05	18/03/05	DLU	093
E0110	Polycyclic Aromatic Hydrocarbons	18/03/05	19/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

	Lab No	E183489	E183490	E183491	E183493	E183495
		CBH89	CBH89	CBH88	CBH88	CBH87
Analyte	Sample Id	0.0-0.3	0.5-1.0	0.0-0.3	0.5-0.8	0.0-0.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	13%	27%	9%	15%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	60	70	nd	200
C29-C36 Fraction	50	nd	60	90	nd	160
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	nd	--	nd	--
Toluene	1	--	nd	--	nd	--
Ethylbenzene	1	--	nd	--	nd	--
m&p-Xylene	2	--	nd	--	nd	--
o-Xylene	1	--	nd	--	nd	--
4-Bromofluorobenzene-SURROGATE	1	--	91%	--	88%	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183496	E183497	E183498	E183499	E183501
		CBH87	CBH91	CBH91		CBH94
	Sample Id	0.5-0.7	0.0-0.1	0.5-0.6	DUPB1	0.2-0.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	25%	7%	18%	15%	25%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	10
C15-C28 Fraction	50	nd	nd	nd	nd	60
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	104%	92%	81%	83%	94%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183502	E183991			
		CBH94	CBH89			
	Sample Id	0.8-1.0	1.5-1.7			
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	12%	17%			
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--			
C15-C28 Fraction	50	nd	--			
C29-C36 Fraction	50	nd	--			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--			
Toluene	1	--	--			
Ethylbenzene	1	--	--			
m&p-Xylene	2	--	--			
o-Xylene	1	--	--			
4-Bromofluorobenzene-SURROGATE	1	--	--			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183489	E183490	E183491	E183493	E183495
		CBH89	CBH89	CBH88	CBH88	CBH87
	Sample Id	0.0-0.3	0.5-1.0	0.0-0.3	0.5-0.8	0.0-0.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	1.0	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	10	15	17	nd	15
Nickel	2	5	2	11	nd	12
Lead	5	25	180	27	10	22
Zinc	5	84	320	120	15	88
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	0.11	0.05	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183496	E183497	E183498	E183499	E183501
		CBH87	CBH91	CBH91		CBH94
	Sample Id	0.5-0.7	0.0-0.1	0.5-0.6	DUPB1	0.2-0.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	10	nd	nd	5
Copper	5	nd	10	nd	9	12
Nickel	2	nd	18	nd	4	10
Lead	5	nd	7	nd	22	21
Zinc	5	nd	27	nd	75	69
E5950 Mercury in Soil						
Mercury	0.05	0.06	0.05	nd	nd	0.31

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183502				
		CBH94				
	Sample Id	0.8-1.0				
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	9				
Zinc	5	53				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183489	E183490	E183491	E183493	E183495
		CBH89	CBH89	CBH88	CBH88	CBH87
	Sample Id	0.0-0.3	0.5-1.0	0.0-0.3	0.5-0.8	0.0-0.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	0.9
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	1.2	nd	nd	3.2
Pyrene	0.5	nd	1.2	nd	nd	3.8
Benz(a)anthracene	0.5	nd	0.8	nd	nd	2.4
Chrysene	0.5	nd	0.8	nd	nd	1.6
Benzo(b) & (k)fluoranthene	1	nd	2	nd	nd	5
Benzo(a)pyrene	0.5	nd	1.0	nd	nd	3.2
Indeno(1.2.3-cd)pyrene	0.5	nd	0.9	nd	nd	3.2
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	0.7	nd	nd	2.6
Total USEPA Priority PAHs	0.5	nd	8.2	nd	nd	26
2-Fluorobiphenyl-SURROGATE	1	103%	104%	106%	95%	98%
Anthracene-d10-SURROGATE	1	99%	104%	106%	98%	98%
p-Terphenyl-D14-SURROGATE	1	107%	109%	111%	100%	101%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183496	E183497	E183498	E183499	E183501
		CBH87	CBH91	CBH91		CBH94
	Sample Id	0.5-0.7	0.0-0.1	0.5-0.6	DUPB1	0.2-0.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	105%	102%	103%	99%	101%
Anthracene-d10-SURROGATE	1	109%	98%	108%	98%	99%
p-Terphenyl-D14-SURROGATE	1	111%	103%	111%	102%	106%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183502				
		CBH94				
	Sample Id	0.8-1.0				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				
Total USEPA Priority PAHs	0.5	nd				
2-Fluorobiphenyl-SURROGATE	1	103%				
Anthracene-d10-SURROGATE	1	108%				
p-Terphenyl-D14-SURROGATE	1	111%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183489	E183491	E183495	E183502	
		CBH89	CBH88	CBH87	CBH94	
	Sample Id	0.0-0.3	0.0-0.3	0.0-0.3	0.8-1.0	
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd	nd	
Bromobenzene	1	nd	nd	nd	nd	
Bromochloromethane	1	nd	nd	nd	nd	
Bromodichloromethane	1	nd	nd	nd	nd	
Bromoform	1	nd	nd	nd	nd	
Bromomethane	1	nd	nd	nd	nd	
n-Butylbenzene	1	nd	nd	nd	nd	
sec-Butylbenzene	1	nd	nd	nd	nd	
tert-Butylbenzene	1	nd	nd	nd	nd	
Carbon tetrachloride	1	nd	nd	nd	nd	
Chlorobenzene	1	nd	nd	nd	nd	
Chloroethane	1	nd	nd	nd	nd	
Chloroform	1	nd	nd	nd	nd	
Chloromethane	1	nd	nd	nd	nd	
2-Chlorotoluene	1	nd	nd	nd	nd	
4-Chlorotoluene	1	nd	nd	nd	nd	
Dibromochloromethane	1	nd	nd	nd	nd	
1.2-Dibromo-3-chloropropane	1	nd	nd	nd	nd	
1.2-Dibromoethane (EDB)	1	nd	nd	nd	nd	
Dibromomethane	1	nd	nd	nd	nd	
1.2-Dichlorobenzene	1	nd	nd	nd	nd	
1.3-Dichlorobenzene	1	nd	nd	nd	nd	
1.4-Dichlorobenzene	1	nd	nd	nd	nd	
Dichlorodifluoromethane	1	nd	nd	nd	nd	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183489	E183491	E183495	E183502	
		CBH89	CBH88	CBH87	CBH94	
	Sample Id	0.0-0.3	0.0-0.3	0.0-0.3	0.8-1.0	
	PQL					
1.1-Dichloroethene	1	nd	nd	nd	nd	
1.2-Dichloroethane	1	nd	nd	nd	nd	
1.1-Dichloroethane	1	nd	nd	nd	nd	
cis-1.2-Dichloroethene	1	nd	nd	nd	nd	
trans-1.2-Dichloroethene	1	nd	nd	nd	nd	
1.2-Dichloropropane	1	nd	nd	nd	nd	
1.3-Dichloropropane	1	nd	nd	nd	nd	
2.2-Dichloropropane	1	nd	nd	nd	nd	
1.1-Dichloropropylene	1	nd	nd	nd	nd	
cis-1.3-Dichloropropylene	1	nd	nd	nd	nd	
trans-1.3-Dichloropropylene	1	nd	nd	nd	nd	
Ethylbenzene	1	nd	nd	nd	nd	
Hexachlorobutadiene	1	nd	nd	nd	nd	
Isopropylbenzene	1	nd	nd	nd	nd	
p-Isopropyltoluene	1	nd	nd	nd	nd	
Methylene chloride	1	nd	nd	nd	nd	
Naphthalene	1	nd	nd	nd	nd	
n-Propylbenzene	1	nd	nd	nd	nd	
Styrene	1	nd	nd	nd	nd	
1.1.1.2-Tetrachloroethane	1	nd	nd	nd	nd	
1.1.2.2-Tetrachloroethane	1	nd	nd	nd	nd	
Tetrachloroethene	1	nd	nd	nd	nd	
Toluene	1	nd	nd	nd	nd	
1.2.3-Trichlorobenzene	1	nd	nd	nd	nd	
1.2.4-Trichlorobenzene	1	nd	nd	nd	nd	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No	E183489	E183491	E183495	E183502	
		CBH89	CBH88	CBH87	CBH94	
	Sample Id	0.0-0.3	0.0-0.3	0.0-0.3	0.8-1.0	
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd	nd	
1.1.2-Trichloroethane	1	nd	nd	nd	nd	
Trichloroethene	1	nd	nd	nd	nd	
Trichlorofluoromethane	1	nd	nd	nd	nd	
1.2.3-Trichloropropane	1	nd	nd	nd	nd	
1.2.4-Trimethylbenzene	1	nd	nd	nd	nd	
1.3.5-Trimethylbenzene	1	nd	nd	nd	nd	
Vinyl chloride	1	nd	nd	nd	nd	
ortho-Xylene	1	nd	nd	nd	nd	
meta- & para-Xylene	2	nd	nd	nd	nd	
Pentafluorobenzene-SURROGATE	1	99%	99%	99%	99%	
Toluene-D8-SURROGATE	1	100%	100%	100%	100%	
4-Bromofluorobenzene-SURROGATE	1	98%	97%	98%	98%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183497				
		CBH91				
	Sample Id	0.0-0.1				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	108%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183497				
		CBH91				
	Sample Id	0.0-0.1				
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Merphos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				
2-Nitro-m-xylene-SURROGATE	1	108%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183503	E183504			
	Sample Id	TS	TB			
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	nd			
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	nd			
C15-C28 Fraction	100	--	nd			
C29-C36 Fraction	100	--	nd			
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	9.4	nd			
Toluene	1	9	nd			
Ethylbenzene	1	8	nd			
m&p-Xylene	2	18	nd			
o-Xylene	1	9	nd			
4-Bromofluorobenzene-SURROGATE	1	104%	99%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30606
Project : E12723/4 AREA B

Analyte	Lab No / Sample Id / PQL	E183504 / TB /				
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0951

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30606

Project : E12723/4 AREA B

Analyte	Lab No	E183504				
	Sample Id	TB				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	85%				
Anthracene-D10-SURROGATE	1	89%				
p-Terphenyl-D14-SURROGATE	1	91%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5582/ 8106 / 1 - 5
Your ref: 5E0951
NATA Accreditation No: 14484

24 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff,
NSW 2285.

Attn: Ms. Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of five samples, forwarded by Amdel Laboratories Ltd, on 22 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5582 / 8106 / 1. E183489 / CBH89.
Approx dimensions 4.5 cm x 4.5 cm x 5.0 cm
The sample consisted of mixture of sandy soil, stones and fragments of plaster.
No asbestos detected.

Sample No. 2. ASET5582 / 8106 / 2. E183491 / CBH88.
Approx dimensions 4.5 cm x 4.5 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

Sample No. 3. ASET5582 / 8106 / 3. E183495 / CHB87.
Approx dimensions 4.5 cm x 4.5 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

Sample No. 4. ASET5582 / 8106 / 4. E183497 / CBH91.
Approx dimensions 4.5 cm x 4.5 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 5. ASET5582 / 8106 / 5. E183501 / CBH94.
Approx dimensions 4.5 cm x 4.5 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

NATA Accredited Laboratory Number:

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA's registered scope which includes the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Michaela Foley B EnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0951

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0951

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0951

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183489)							
C6-C9 Fraction	100	81		81%			
E1221 TPH in Soil (E183489)							
C10-C14 Fraction							
C15-C28 Fraction	550	480		87%			
C29-C36 Fraction							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	81			81%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			95%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	8.2			82%		
Toluene	10	9			86%		
Ethylbenzene	10	8			80%		
m&p-Xylene	20	16			79%		
o-Xylene	10	9			87%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183489,E183490)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E183489,E183490)								
C10-C14 Fraction	nd	nd			nd	nd		
C15-C28 Fraction	nd	nd			60	60	60	0%
C29-C36 Fraction	nd	nd			70	60	70	15%
E1010 BTEX (P&T) in Soil (E183490)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E183489)							
Arsenic	50	35		70%			
Cadmium	50	40		80%			
Chromium	50	39		78%			
Copper	50	50		100%			
Nickel	50	39		79%			
Lead	50	38		76%			
Zinc	50	36		72%			
E5950 Mercury in Soil (E183489)							
Mercury	0.50	0.45		91%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	44			89%		
Cadmium	50	44			88%		
Chromium	50	41			83%		
Copper	50	46			92%		
Nickel	50	46			92%		
Lead	50	43			86%		
Zinc	50	44			88%		
E5950 Mercury in Soil							
Mercury	0.50	0.41			83%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E183489,E183490)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	nd	nd			nd	nd		
Copper	8	10	9	22%	17	15	16	12%
Nickel	4	5	5	22%	nd	2	2	
Lead	19	25	22	27%	J	180	180	
Zinc	65	84	75	25%	370	320	350	14%
E5950 Mercury in Soil (E183489,E183490)								
Mercury	nd	nd			0.05	nd	0.05	

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	0.5				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E183489)							
Naphthalene	5	4.6		91%			
Acenaphthylene	5	4.8		97%			
Acenaphthene	5	4.6		92%			
Fluorene	5	4.6		91%			
Phenanthrene	5	4.6		92%			
Anthracene	5	4.6		92%			
Fluoranthene	5	5.0		101%			
Pyrene	5	5.0		99%			
Benz(a)anthracene	5	5.4		109%			
Chrysene	5	4.4		87%			
Benzo(b) & (k)fluoranthene	10	10		98%			
Benzo(a)pyrene	5	5.6		113%			
Indeno(1.2.3-cd)pyrene	5	5.8		115%			
Dibenz(a.h)anthracene	5	5.4		107%			
Benzo(g.h.i)perylene	5	5.0		102%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.8			98%		
Acenaphthylene	5	5.2			106%		
Acenaphthene	5	4.8			98%		
Fluorene	5	5.0			99%		
Phenanthrene	5	4.8			97%		
Anthracene	5	5.0			100%		
Fluoranthene	5	5.2			103%		
Pyrene	5	5.0			102%		
Benz(a)anthracene	5	5.6			112%		
Chrysene	5	4.6			94%		
Benzo(b) & (k)fluoranthene	10	10			104%		
Benzo(a)pyrene	5	6.0			121%		
Indeno(1.2.3-cd)pyrene	5	6.4			129%		
Dibenz(a.h)anthracene	5	6.0			120%		
Benzo(g.h.i)perylene	5	5.8			115%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E183489,E183490)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	nd	nd			1.2	1.2	1.2	0%
Pyrene	nd	nd			1.4	1.2	1.4	15%
Benz(a)anthracene	nd	nd			0.8	0.8	0.8	0%
Chrysene	nd	nd			0.8	0.8	0.8	0%
Benzo(b) & (k)fluoranthene	nd	nd			2	2	2	0%
Benzo(a)pyrene	nd	nd			1.2	1.0	1.2	18%
Indeno(1.2.3-cd)pyrene	nd	nd			1.0	0.9	1.0	10%
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			0.7	0.7	0.7	0%

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.6			96%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			105%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			94%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			93%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			92%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			100%		
a-BHC	0.5	0.5			104%		
g-BHC	0.5	0.5			102%		
Heptachlor	0.5	0.5			102%		
Aldrin	0.5	0.5			102%		
b-BHC	0.5	0.5			102%		
d-BHC	0.5	0.5			104%		
Oxychlordane	0.5	0.6			110%		
Heptachlor epoxide	0.5	0.5			102%		
Endosulfan 1	0.5	0.5			102%		
Chlordane-Trans	0.5	0.5			102%		
Chlordane-Cis	0.5	0.5			102%		
trans-Nonachlor	0.5	0.5			96%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			102%		
Endrin	0.5	0.5			102%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			102%		
DDT	1	1.0			100%		
Endosulfan sulfate	0.5	0.5			102%		
Methoxychlor	0.5	0.5			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	6.4			128%		
Mevinphos	5	6.2			122%		
Ethoprop	5	6.4			126%		
Phorate	5	6.6			130%		
Demeton-s-methyl	5	6.6			130%		
Diazinon	5	6.6			130%		
Disulfoton	5	6.6			130%		
Ronnel	5	6.2			122%		
Chlorpyrifos methyl	5	6.6			130%		
Chlorpyrifos	5	6.4			126%		
Parathion methyl	5	6.6			130%		
Fenthion	5	6.6			130%		
Malathion	5	6.6			130%		
Fenitrothion	5	6.2			124%		
Prothiophos	5	5.0			100%		
Stirophos	5	6.2			122%		
Ethion	5	6.0			120%		
Bolstar	5	5.8			116%		
Fensulfothion	5	5.2			104%		
Azinphos methyl	5	6.0			120%		
Coumaphos	5	5.2			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	180			90%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	4650			85%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	10			99%		
Toluene	10	10			95%		
Ethylbenzene	10	9			88%		
m&p-Xylene	20	19			93%		
o-Xylene	10	10			98%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4970 Total Recoverable Metals in Waters							
Arsenic	0.100	0.102			102%		
Cadmium	0.100	0.099			99%		
Chromium	0.100	0.091			91%		
Copper	0.100	0.101			101%		
Nickel	0.100	0.101			101%		
Lead	0.100	0.098			98%		
Zinc	0.100	0.10			100%		
E4950 Total Recoverable Mercury in Water							
Mercury	0.010	0.010			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0951

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	7			73%		
Acenaphthylene	10	8			82%		
Acenaphthene	10	8			77%		
Fluorene	10	8			83%		
Phenanthrene	10	8			80%		
Anthracene	10	8			79%		
Fluoranthene	10	8			83%		
Pyrene	10	8			84%		
Benz(a)anthracene	10	8			77%		
Chrysene	10	9			91%		
Benzo(b) & (k)fluoranthene	20	17			85%		
Benzo(a)pyrene	10	7			72%		
Indeno(1.2.3-cd)pyrene	10	7			74%		
Dibenz(a.h)anthracene	10	8			82%		
Benzo(g.h.i)perylene	10	8			85%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FROM: Client Services Cardiff

DATE: 11/03/05

AMENDED

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30606
Project:	E12723/4 AREA B
Our Reference Number :	5E0951
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	12	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	7	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	11	are typically 3-5 working
Volatile Organic Compounds	E1290	4	days.
TPH (C10-C36)	E1221	11	
Metals by ICP-AES	E5910	11	
Mercury in Soil	E5950	11	
Polycyclic Aromatic Hydrocarbons	E1110	11	
Organochlorine Pesticides	E1080	1	
Organophosphorus Pesticides	E1090	1	
Asbestos	E8112	5	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	2	
TPH C6-C9 by purge & trap	E0230	1	
TPH (C10-C36)	E0221F	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).
* Samples received in good condition and appropriately preserved for all tests.
* VOC/SVOC samples were received in teflon lined lids.
* VOC samples were received with Zero Headspace.
* Samples were recieved in sufficient time to allow us to meet holding time requirements.

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 58 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FROM: Client Services Cardiff

DATE: 11/03/05

AMENDED

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30606
Project:	E12723/4 AREA B
Our Reference Number :	5E0951
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	1	
Total Metals by ICP-MS	E4970	1	Amdel's turnaround times
Mercury	E4950	1	are typically 3-5 working
Australian GST	GST		days.

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).
* Samples received in good condition and appropriately preserved for all tests.
* VOC/SVOC samples were received in teflon lined lids.
* VOC samples were received with Zero Headspace.
* Samples were recieved in sufficient time to allow us to meet holding time requirements.

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30606
Project:	E12723/4 AREA B
Our Reference Number :	5E0951
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Benzene, Toluene, Ethylbenzene & Xylene	E1010	9	
TPH C6-C9 by Purge & Trap	E1230	12	Amdel's turnaround times are typically 3-5 working days.
Volatile Organic Compounds	E1290	4	
TPH (C10-C36)	E1221	12	
Metals by ICP-AES	E5910	12	
Mercury in Soil	E5950	12	
Polycyclic Aromatic Hydrocarbons	E1110	12	
Organochlorine Pesticides	E1080	1	
Organophosphorus Pesticides	E1090	1	
Asbestos	E8112	5	
Samples on Hold (Soil)	E7600	4	
Australian GST	GST		

QCNOTE10

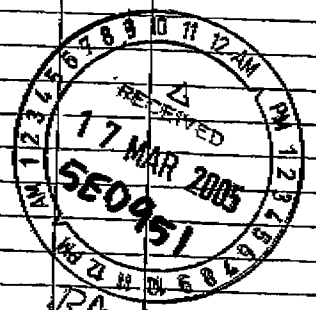
Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).
* Samples received in good condition and appropriately preserved for all tests.
* VOC/SVOC samples were received in teflon lined lids.
* VOC samples were received with Zero Headspace.
* Samples were recieved in sufficient time to allow us to meet holding time requirements.

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

	Area	Sample ID	Date Collected	Comments	Analysis						
					TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
495	Area B	CBH87 0.0-0.3	10/03/2005				1	1			1
496		CBH87 0.5-0.7	10/03/2005		1			1			
491		CBH88 0.0-0.3	10/03/2005				1	1			1
492		CBH88 0.3-0.5	10/03/2005								
493		CBH88 0.5-0.8	10/03/2005		1			1			
494		CBH88 1.5-1.8	10/03/2005								
E183489		CBH89 0.0-0.3	10/03/2005				1	1			1
490		CBH89 0.5-1.0	10/03/2005		1			1			
981		CBH89 1.5-1.7	10/03/2005	Not listed on CoC							
497		CBH91 0.0-0.1	10/03/2005		1			1	1	1	1
498		CBH91 0.5-0.6	10/03/2005		1			1			
501		CBH94 0.2-0.3	10/03/2005		1			1			1
502		CBH94 0.8-1.0	10/03/2005				1	1			
499		DUPB1	10/03/2005		1			1			
		DUPB2	10/03/2005	ALS							
500		DUPB3	10/03/2005								
		DUPB4	10/03/2005	ALS							
		TS	10/03/2005								
		TB	10/03/2005								
		CBH75 0.2-0.3	11/03/2005		1			1			
		CBH75 0.6-0.7	11/03/2005		1			1			
		CBH76 0.2-0.3	11/03/2005		1			1			1
		CBH76 0.7-0.85	11/03/2005		1			1			
		CBH122 0.2-0.3	11/03/2005		1			1			1
		CBH122 0.5-0.7	11/03/2005				1	1			
		CBH123 0.2-0.3	11/03/2005		1			1			
		CBH123 0.5-0.7	11/03/2005					1			
		CBH123 1.5-1.7	11/03/2005				1	1			
		CBH123 2.0-2.2	11/03/2005								
		DUPB5	11/03/2005								
		DUPB6	11/03/2005								



504	WB	11/03/2005	Listed on COC as TB	1			1			
	TB 11.3.05	11/03/2005	Not Listed on COC		1					
503	TS	11/03/2005			1					
	ASBESTOS 1	14/03/2005								1
	ASBESTOS 2	14/03/2005								1
	ASBESTOS 3	14/03/2005								1
			No. of Analyses	14	2	6	20	1	1	10

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

LOG IN SEPARATE TO AREA D

AREA B

No: 30606

Chain of Custody

Laboratory Quotation / Order No: HT/COFFEY QUOTE

Job No: E12723/4

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL SYDNEY	Sampled by: SNIDER DUERINCKX	Consigning Office: SYDNEY Date Dispatched: 10 3 05
Attention: JULIE EDMAN	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: AMDEL PICKUP Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	10 3 05	4 pm	Emily Brittain		4.10 6.30 2.00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
E183489	SOIL	GLASS	CBH89 0.0-0.3	10 3 05					
10			CBH89 0.5-1.0						
1			CBH88 0.0-0.3						
2			CBH88 0.3-0.5						
3			CBH88 0.5-0.8		HOLD FOR LATER INSTRUCTION				
4			CBH88 1.5-1.8						
5			CBH87 0.0-0.3						
6			CBH87 0.5-0.7						
7			CBH91 0.0-0.1						
8			CBH91 0.5-0.6						
9			DUP B1						
[illegible]			DUP B2		→ TO ALS FOR HOLD				
20			DUP B3						
			DUP B4		→ TO ALS FOR HOLD				
1			CBH94 0.2-0.3						
2			CBH94 0.8-1.0		HOLD FOR LATER INSTRUCTION				
3	WATER		TS						
4	↓	↓	TB	↓					
			CBH89 1.5-1.6						

Special Laboratory Instructions:
E183991

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0952
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	31
Reference/Order	:	E12723/4/27317-8
Project	:	E12723/4 AREA D
Received Samples	:	11/03/05
Instructions	:	17/03/05
Date Reported	:	05/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0952

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	22/03/05	23/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	22/03/05	01/04/05	GTO	094
E1221	TPH (C10-C36)	22/03/05	23/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	22/03/05	01/04/05	GTO	094
E5910	Metals by ICP-AES	24/03/05	24/03/05	DLU	093
E5950	Mercury in Soil	24/03/05	24/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	22/03/05	24/03/05	MFA	095
E1080	Organochlorine Pesticides	22/03/05	23/03/05	MFA	095
E1290	Volatile Organic Compounds	22/03/05	23/03/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	30/03/05	30/03/05	GTO	094

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183506	E183508	E183511	E183513	E183516
		CBH112	CBH112	CBH119	CBH119	CBH97
	Sample Id	0.5-0.95	2.5-2.95	0.5-0.95	2.5-2.7	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%	22%	25%	21%	4%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--	nd	--	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--	nd	--	nd
C15-C28 Fraction	50	nd	--	120	--	nd
C29-C36 Fraction	50	nd	--	nd	--	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	--	--	nd
Toluene	1	nd	--	--	--	nd
Ethylbenzene	1	nd	--	--	--	nd
m&p-Xylene	2	nd	--	--	--	nd
o-Xylene	1	nd	--	--	--	nd
4-Bromofluorobenzene-SURROGATE	1	81%	--	--	--	82%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183517	E183530	E183532	E183534	
		CBH97	CBH116	CBH116		
	Sample Id	0.5-0.95	0.0-0.2	1.5-1.8	DUP-D2	
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	7%	11%	7%	
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	
C15-C28 Fraction	50	70	nd	nd	nd	
C29-C36 Fraction	50	nd	nd	nd	nd	
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	
Toluene	1	nd	nd	nd	nd	
Ethylbenzene	1	nd	nd	nd	nd	
m&p-Xylene	2	nd	nd	nd	nd	
o-Xylene	1	nd	nd	nd	nd	
4-Bromofluorobenzene-SURROGATE	1	83%	75%	78%	78%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183506	E183508	E183511	E183516	E183517
		CBH112	CBH112	CBH119	CBH97	CBH97
	Sample Id	0.5-0.95	2.5-2.95	0.5-0.95	0.0-0.2	0.5-0.95
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	14	nd	nd	nd
Copper	5	13	16	16	7	6
Nickel	2	5	14	2	2	2
Lead	5	41	49	67	21	22
Zinc	5	58	100	74	35	36
E5950 Mercury in Soil						
Mercury	0.05	nd	0.08	0.09	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183530	E183532	E183534		
		CBH116	CBH116			
	Sample Id	0.0-0.2	1.5-1.8	DUP-D2		
	PQL					
E5910 Metals in Soil						
Arsenic	5	6	nd	6		
Cadmium	0.5	nd	nd	nd		
Chromium	5	7	13	8		
Copper	5	13	nd	13		
Nickel	2	nd	nd	nd		
Lead	5	61	nd	64		
Zinc	5	52	nd	54		
E5950 Mercury in Soil						
Mercury	0.05	0.09	nd	0.08		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183506	E183511	E183516	E183517	E183530
		CBH112	CBH119	CBH97	CBH97	CBH116
	Sample Id	0.5-0.95	0.5-0.95	0.0-0.2	0.5-0.95	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.6	1.4	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	1.2	2.2	0.6	0.7	0.8
Pyrene	0.5	1.4	2.4	0.7	0.8	1.0
Benz(a)anthracene	0.5	0.7	1.2	nd	nd	0.5
Chrysene	0.5	0.6	1.0	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	1	2	nd	nd	nd
Benzo(a)pyrene	0.5	0.7	1.2	nd	nd	0.6
Indeno(1.2.3-cd)pyrene	0.5	0.5	0.8	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	0.5	0.7	nd	nd	nd
Total USEPA Priority PAHs	0.5	7.4	13	1.4	1.4	2.8
2-Fluorobiphenyl-SURROGATE	1	99%	94%	92%	99%	99%
Anthracene-d10-SURROGATE	1	98%	92%	91%	101%	99%
p-Terphenyl-D14-SURROGATE	1	98%	91%	91%	102%	101%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183532	E183534			
		CBH116				
	Sample Id	1.5-1.8	DUP-D2			
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	nd	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	nd	0.5			
Pyrene	0.5	nd	0.6			
Benz(a)anthracene	0.5	nd	nd			
Chrysene	0.5	nd	nd			
Benzo(b) & (k)fluoranthene	1	nd	nd			
Benzo(a)pyrene	0.5	nd	nd			
Indeno(1.2.3-cd)pyrene	0.5	nd	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	nd	nd			
Total USEPA Priority PAHs	0.5	nd	1.2			
2-Fluorobiphenyl-SURROGATE	1	96%	92%			
Anthracene-d10-SURROGATE	1	102%	94%			
p-Terphenyl-D14-SURROGATE	1	101%	94%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183516	E183530	E183534		
		CBH97	CBH116			
	Sample Id	0.0-0.2	0.0-0.2	DUP-D2		
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd		
a-BHC	0.1	nd	nd	nd		
g-BHC	0.1	nd	nd	nd		
Heptachlor	0.1	nd	nd	nd		
Aldrin	0.1	nd	nd	nd		
b-BHC	0.1	nd	nd	nd		
d-BHC	0.1	nd	nd	nd		
Oxychlordane	0.1	nd	nd	nd		
Heptachlor epoxide	0.1	nd	nd	nd		
Endosulfan 1	0.1	nd	nd	nd		
Chlordane-Trans	0.1	nd	nd	nd		
Chlordane-Cis	0.1	nd	nd	nd		
trans-Nonachlor	0.1	nd	nd	nd		
DDE	0.1	nd	nd	nd		
Dieldrin	0.1	nd	nd	nd		
Endrin	0.1	nd	nd	nd		
DDD	0.1	nd	nd	nd		
Endosulfan 2	0.1	nd	nd	nd		
DDT	0.1	nd	nd	nd		
Endosulfan sulfate	0.1	nd	nd	nd		
Methoxychlor	0.1	nd	nd	nd		
2.4.5.6-TCMX-SURROGATE	1	103%	99%	102%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183511				
		CBH119				
	Sample Id	0.5-0.95				
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183511				
		CBH119				
	Sample Id	0.5-0.95				
	PQL					
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183511				
		CBH119				
	Sample Id	0.5-0.95				
	PQL					
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	85%				
Toluene-D8-SURROGATE	1	100%				
4-Bromofluorobenzene-SURROGATE	1	98%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183520	E183521	E183993		
		TS050310		TS050310		
	Sample Id	.10	TB	.20		
	PQL					
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	12	nd	11		
Toluene	1	12	nd	10		
Ethylbenzene	1	11	nd	9		
m&p-Xylene	2	24	nd	21		
o-Xylene	1	12	nd	10		
4-Bromofluorobenzene-SURROGATE	1	123%	89%	106%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 56 625 960 402
585 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 5899 Fax (03) 9562 0336

Analytical Report

AMDEL ENVIRONMENTAL - SYDNEY
99 Mitchell Road
Cardiff

NSW 2285

Contact	: **BRETT McLENNAM**
Batch Number	: **0503878**
Job Ref	: **5E0952**
Sample(s) Received	: **06/04/2005**
Report No	: **141710**

Methods:

SPOCAS - Acid Nuetralising Capacity (ANCe)#
SPOCAS - Peroxide Oxidisable Sulfur #
SPOCAS - Reacted Calcium #
SPOCAS - Reacted Magnesium #
SPOCAS - Residual Acid Soluble Sulfur #
SPOCAS - Sulfidic Acidity #
SPOCAS Method 23 - TPA, TAA, pH(KCl), pH(ox)#

Attached Results Approved by:

Susan Groth
B.Sc. (Chemistry)
Teamleader - Waters

Anthony Crane
B.App.Sci. (Environmental)
Laboratory Manager

John Levvey
Dip.App.Sci (Chemistry)
Teamleader - Metals

Document may not be reproduced except in full.

**** This is the Final Report which supersedes any reports previously issued relating to the sample(s) included.***
All samples tested as submitted by client.
 # Denotes methods not covered by NATA terms of accreditation

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 66 828 960 402
585 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 8899 Fax (03) 9562 0336

Results

Report No: 141710

	0503878/001
	CBH119/2.5-2.7
	E183513
	Soil
	5/04/05

SUSPENSION POCAS

Method 23 (SPOCAS) Units: As stated

pH (KCl) extract #	6.8
pH (ox) Peroxide Extract #	4.3
Total Actual Acidity # mol H+/t	<5.0
Total Potential Acidity # mol H+/t	<5.0

SUSPENSION POCAS - Peroxide Oxidisable Sulfur

Method 23 (SPOCAS) Units : %

Peroxide Oxidisable Sulfur , Spos% #	0.04

SUSPENSION POCAS - Sulfidic Acidity

Method 23 (SPOCAS) Units : mol H+/t

Total Sulfidic Acidity # (Acid trail), mol H+/t	<5

SUSPENSION POCAS- Acid Nuetralising Capacity

Method 23 (SPOCAS) Units: % CaCO3

Acid Neutralising # Capacity	0.45

SUSPENSION POCAS- Reacted Calcium

Method 23 (SPOCAS) Units : %

Reactive Calcium # Ca_a	0.02

SUSPENSION POCAS- Reacted Magnesium

Method 23 (SPOCAS) Units: %

Reactive Magnesium	<0.01

SUSPENSION POCAS- Residual Acid Soluble Sulfur

Method 23 (SPOCAS) Units %S

Residual Acid Soluble Sulur #	<0.01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0952

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0952

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0952

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183506,E183525)							
C6-C9 Fraction	100	92		92%			
E1221 TPH in Soil (E183506,E183525)							
C10-C14 Fraction							
C15-C28 Fraction	550	540		97%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E183506,E183525)							
Benzene	10	9.6		96%			
Toluene	10	9		92%			
Ethylbenzene	10	9		92%			
m&p-Xylene	20	19		94%			
o-Xylene	10	10		97%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	99			99%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	500			90%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.8			99%		
Toluene	10	9			93%		
Ethylbenzene	10	10			97%		
m&p-Xylene	20	20			98%		
o-Xylene	10	10			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183506)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E183506)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E183506)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E183506,E183525)							
Arsenic	50	46		92%			
Cadmium	50	46		92%			
Chromium	50	48		96%			
Copper	50	41		82%			
Nickel	50	47		94%			
Lead	50	36		72%			
Zinc	50	37		74%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	45	45		91%	91%	
Cadmium	50	46	47		93%	93%	
Chromium	50	49	49		99%	99%	
Copper	50	46	46		92%	92%	
Nickel	50	47	47		93%	94%	
Lead	50	45	46		91%	91%	
Zinc	50	46	46		92%	93%	
E5950 Mercury in Soil							
Mercury	0.50	0.43	0.42		85%	85%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E183506)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	16	13	15	20%				
Nickel	5	5	5	0%				
Lead	33	41	37	21%				
Zinc	J	58	58					
E5950 Mercury in Soil (E183506)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E183506,E183525)							
Naphthalene	5	5.0		99%			
Acenaphthylene	5	5.2		104%			
Acenaphthene	5	5.0		101%			
Fluorene	5	5.0		101%			
Phenanthrene	5	5.0		99%			
Anthracene	5	5.2		104%			
Fluoranthene	5	5.0		99%			
Pyrene	5	5.0		99%			
Benz(a)anthracene	5	5.0		100%			
Chrysene	5	4.8		95%			
Benzo(b) & (k)fluoranthene	10	10		99%			
Benzo(a)pyrene	5	5.0		99%			
Indeno(1.2.3-cd)pyrene	5	5.2		102%			
Dibenz(a.h)anthracene	5	5.2		105%			
Benzo(g.h.i)perylene	5	5.0		101%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.6			92%		
Acenaphthylene	5	4.6			94%		
Acenaphthene	5	4.6			93%		
Fluorene	5	4.6			91%		
Phenanthrene	5	4.8			94%		
Anthracene	5	4.6			94%		
Fluoranthene	5	4.6			93%		
Pyrene	5	5.0			99%		
Benz(a)anthracene	5	4.6			91%		
Chrysene	5	4.6			91%		
Benzo(b) & (k)fluoranthene	10	9			90%		
Benzo(a)pyrene	5	4.6			91%		
Indeno(1.2.3-cd)pyrene	5	4.8			94%		
Dibenz(a.h)anthracene	5	4.6			91%		
Benzo(g.h.i)perylene	5	4.6			91%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E183506)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	0.7	0.6	0.7	15%				
Anthracene	nd	nd						
Fluoranthene	1.4	1.2	1.4	15%				
Pyrene	1.4	1.4	1.4	0%				
Benz(a)anthracene	0.7	0.7	0.7	0%				
Chrysene	0.7	0.6	0.7	15%				
Benzo(b) & (k)fluoranthene	1	1	1	0%				
Benzo(a)pyrene	0.7	0.7	0.7	0%				
Indeno(1.2.3-cd)pyrene	0.5	0.5	0.5	0%				
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	0.5	0.5	0.5	0%				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			100%		
a-BHC	0.5	0.5			96%		
g-BHC	0.5	0.5			96%		
Heptachlor	0.5	0.5			96%		
Aldrin	0.5	0.5			96%		
b-BHC	0.5	0.5			94%		
d-BHC	0.5	0.5			96%		
Oxychlordane	0.5	0.5			94%		
Heptachlor epoxide	0.5	0.5			94%		
Endosulfan 1	0.5	0.5			94%		
Chlordane-Trans	0.5	0.5			94%		
Chlordane-Cis	0.5	0.5			94%		
trans-Nonachlor	0.5	0.5			94%		
DDE	1	1.0			95%		
Dieldrin	0.5	0.5			94%		
Endrin	0.5	0.5			96%		
DDD	1	1.0			94%		
Endosulfan 2	0.5	0.5			96%		
DDT	1	1.0			96%		
Endosulfan sulfate	0.5	0.5			96%		
Methoxychlor	0.5	0.5			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			90%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	11			108%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			88%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	10			98%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	10			97%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			105%		
Toluene	10	10			103%		
Ethylbenzene	10	9			95%		
m&p-Xylene	20	20			100%		
o-Xylene	10	11			105%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27317-8
Project:	E12723/4 AREA D
Our Reference Number :	5E0952
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	10	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	8	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	10	are typically 3-5 working
TPH (C10-C36)	E1221	10	days.
Volatile Organic Compounds	E1290	2	
Metals by ICP-AES	E5910	10	
Mercury in Soil	E5950	10	
Polycyclic Aromatic Hydrocarbons	E1110	10	
Acid Sulphate Soils	POCAS	1	
Asbestos	E8110	4	
Organochlorine Pesticides	E1080	3	
Samples on Hold (Soil)	E7600	18	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	3	
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

Brett McLennan

From: Strider Duerinckx [strider_duerinckx@coffey.com.au]
Sent: Monday, 21 March 2005 2:27 PM
To: Brett McLennan
Cc: anne_northway@coffey.com.au
Subject: Sample Recipt Long Bay E12723/4

Importance: High

5E0952

Brett, I have received your email via Anne Northway regarding logging in of samples for a analysis request received on the 17/3/05.

Please make the following changes:

Samples that were logged in with being 1/4 full:

CBH112 2.5-2.95 - Remove TPH/BTEX/PAH analyses, analyse for 8 metals only E183508

CBH119 2.5-2.7 (also logged in for POCAS) - Remove TPH/BTEX/PAH/8 METALS analyses, analyse for SPOCAS only. E183513

CBH116 0.5-0.7 - Do not analyse E183531

CBH129 1.5-1.7 - Do not analyse

CBH129 2.85-2.9 (BEING ONLY 1/8 FULL) - Do not analyse

The following samples listed on the original COC (27318) sampled on the 10/3/05 should be renamed:

FROM	TO
CBH111 0.0-0.2	CBH121 0.0-0.2
CBH111 0.5-0.95	CBH121 0.5-0.95
CBH111 1.5-1.9	CBH121 1.5-1.9
CBH111 2.5-2.95	CBH121 2.5-2.95
CBH110 0-0.2	CBH120 0-0.2
CBH110 0.5-0.95	CBH120 0.5-0.95
CBH110 1.5-1.95	CBH120 1.5-1.95
CBH110 2.5-2.95	CBH110 2.5-2.95

IE all samples listed as CBH111 for that date changed to CBH121, and all samples list as CBH110 for that date changed to CBH120.

In addition, please add the following samples for analysis:

CBH119 3.5-3.95 - TPH/BTEX/PAH and 8 Metals

CBH119 1.5-1.95 - TPH/VOC/PAH/8 Metals

Regards

Strider Duerinckx

Coffey Geosciences Pty Ltd
ACN 056 335 516; ABN 57 056 335 516
Gosford Office
Unit 17 Mt Penang Parklands, KARIONG NSW 2250
Telephone +61 2 43401811
Facsimile +61 2 43401411
Email strider_duerinckx@coffey.com.au
Web Site http://www.coffey.com.au/)
NB

Area	Sample ID	Date Collected	COMMENTS	Analysis						
				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	Asbestos	SPOCAS
516 AREA D	CBH97 0.0-0.2	10/03/2005		1			1	1	1	
517	CBH97 0.5-0.95	10/03/2005		1			1			
518	CBH97 1.5-1.95	10/03/2005								
519	CBH97 3.5-3.8	10/03/2005								
518360	CBH112 0.0-0.2	10/03/2005								
506	CBH112 0.5-0.95	10/03/2005		1			1		1	
507	CBH112 1.5-1.95	10/03/2005								
508	CBH112 2.5-2.95	10/03/2005	Jar received ¼ full	1			1			
509	CBH112 4.0-4.2	10/03/2005								
530	CBH116 0.0-0.2	10/03/2005		1			1	1	1	
531	CBH116 0.5-0.7	10/03/2005	Jar received ¼ full			1	1			
532	CBH116 1.5-1.8	10/03/2005		1			1			
533	CBH116 2.5-2.95	10/03/2005								
510	CBH119 0.0-0.2	10/03/2005								
511	CBH119 0.5-0.95	10/03/2005				1	1		1	
512	CBH119 1.5-1.95	10/03/2005								
513	CBH119 2.5-2.7	10/03/2005	Jar received ¼ full	1			1			1
514	CBH119 3.5-3.95	10/03/2005								
	CBH120 0.0-0.2	10/03/2005					1	1	1	
	CBH120 0.5-0.95	10/03/2005				1	1			
	CBH120 1.5-1.95	10/03/2005								
	CBH120 2.5-2.95	10/03/2005		1			1			
	CBH121 0.0-0.2	10/03/2005								
	CBH121 0.5-0.95	10/03/2005		1			1		1	
	CBH121 1.5-1.9	10/03/2005				1	1			
	CBH121 2.5-2.95	10/03/2005		1			1			
515	DUPD1	10/03/2005								
534	DUPD2	10/03/2005		1			1	1		
	ALS CBH116 0.0-0.2	10/03/2005	ALS							
	TS	10/03/2005								
	TB	10/03/2005								
	CBH95 0.0-0.2	11/03/2005								
	CBH95 0.7-1.15	11/03/2005		1			1		1	

RECEIVED
17 MAR 2005
5E0952

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0952A
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	2
Reference/Order	:	E12723/4/27317-8
Project	:	E12723/4 AREA D
Received Samples	:	21/03/05
Instructions	:	21/03/05
Date Reported	:	07/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0952A

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	24/03/05	24/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	24/03/05	06/04/05	GTO	094
E1221	TPH (C10-C36)	24/03/05	25/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	24/03/05	06/04/05	GTO	094
E5910	Metals by ICP-AES	31/03/05	31/03/05	DLU	093
E5950	Mercury in Soil	31/03/05	31/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	24/03/05	31/03/05	MFA	095
E1290	Volatile Organic Compounds	24/03/05	30/03/05	GTO	094

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0952A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183512	E183514			
		CBH119	CBH119			
	Sample Id	1.5-1.95	3.5-3.95			
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	20%	20%			
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	50	nd			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	nd			
Toluene	1	--	nd			
Ethylbenzene	1	--	nd			
m&p-Xylene	2	--	nd			
o-Xylene	1	--	nd			
4-Bromofluorobenzene-SURROGATE	1	--	95%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952A

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183512	E183514			
		CBH119	CBH119			
	Sample Id	1.5-1.95	3.5-3.95			
	PQL					
E5910 Metals in Soil						
Arsenic	5	5	nd			
Cadmium	0.5	nd	nd			
Chromium	5	13	nd			
Copper	5	670	nd			
Nickel	2	7	nd			
Lead	5	580	nd			
Zinc	5	530	25			
E5950 Mercury in Soil						
Mercury	0.05	0.14	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952A

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183512	E183514			
		CBH119	CBH119			
	Sample Id	1.5-1.95	3.5-3.95			
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	1.6	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	3.2	nd			
Pyrene	0.5	3.2	nd			
Benz(a)anthracene	0.5	1.6	nd			
Chrysene	0.5	1.4	nd			
Benzo(b) & (k)fluoranthene	1	3	nd			
Benzo(a)pyrene	0.5	1.8	nd			
Indeno(1.2.3-cd)pyrene	0.5	1.2	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	1.2	nd			
Total USEPA Priority PAHs	0.5	18	nd			
2-Fluorobiphenyl-SURROGATE	1	101%	89%			
Anthracene-d10-SURROGATE	1	99%	93%			
p-Terphenyl-D14-SURROGATE	1	102%	93%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952A

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27317-8

Project : E12723/4 AREA D

Analyte	Lab No	E183512				
		CBH119				
	Sample Id	1.5-1.95				
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183512				
		CBH119				
	Sample Id	1.5-1.95				
	PQL					
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0952A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27317-8
Project : E12723/4 AREA D

Analyte	Lab No	E183512				
		CBH119				
	Sample Id	1.5-1.95				
	PQL					
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	99%				
Toluene-D8-SURROGATE	1	100%				
4-Bromofluorobenzene-SURROGATE	1	99%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5682/ 8241 / 1 - 4
Your ref: 5E0952
NATA Accreditation No: 14484

8 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of four samples, forwarded by Amdel Laboratories Ltd, on 7 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5682 / 8241 / 1. 5E0952 - CBH112_0.5-0.95 - E183505.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5682 / 8241 / 2. 5E0952 - CBH119_0.5-0.95 - E183511.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 3. ASET5682 / 8241 / 3. 5E0952 - CBH97_0.0-0.2 - E183516.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 4. ASET5682 / 8241 / 4. 5E0952 - CBH116_0.0-0.2 - E183530.
Approx dimensions 4.0 cm x 4.0 cm x 4.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0952A

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes
Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0952A

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	87			87%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	420			77%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.8			98%		
Toluene	10	10			99%		
Ethylbenzene	10	9			92%		
m&p-Xylene	20	19			93%		
o-Xylene	10	10			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	42			84%		
Cadmium	50	43			86%		
Chromium	50	44			88%		
Copper	50	44			88%		
Nickel	50	41			82%		
Lead	50	41			83%		
Zinc	50	44			87%		
E5950 Mercury in Soil							
Mercury	0.50	0.43			85%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.2			85%		
Acenaphthylene	5	4.2			83%		
Acenaphthene	5	4.2			86%		
Fluorene	5	4.4			89%		
Phenanthrene	5	4.2			84%		
Anthracene	5	4.2			85%		
Fluoranthene	5	4.2			84%		
Pyrene	5	4.2			85%		
Benz(a)anthracene	5	4.0			79%		
Chrysene	5	4.2			84%		
Benzo(b) & (k)fluoranthene	10	8			82%		
Benzo(a)pyrene	5	4.0			80%		
Indeno(1.2.3-cd)pyrene	5	4.2			84%		
Dibenz(a.h)anthracene	5	4.2			82%		
Benzo(g.h.i)perylene	5	4.2			86%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			89%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	9			93%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	8			82%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			90%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			87%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0952A

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 21/03/05

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27317-8
Project:	E12723/4 AREA D
Our Reference Number :	5E0952A
Date Received by Amdel :	21/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	2	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	1	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	2	are typically 3-5 working
TPH (C10-C36)	E1221	2	days.
Volatile Organic Compounds	E1290	1	
Metals by ICP-AES	E5910	2	
Mercury in Soil	E5950	2	
Polycyclic Aromatic Hydrocarbons	E1110	2	
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Brett McLennan

From: Strider Duerinckx [strider_duerinckx@coffey.com.au]
Sent: Monday, 21 March 2005 2:27 PM
To: Brett McLennan
Cc: anne_northway@coffey.com.au
Subject: Sample Recipt Long Bay E12723/4

Importance: High

Brett, I have received your email via Anne Northway regarding logging in of samples for a analysis request received on the 17/3/05.

Please make the following changes:

Samples that were logged in with being 1/4 full:

CBH112 2.5-2.95 - Remove TPH/BTEX/PAH analyses, analyse for 8 metals only

CBH119 2.5-2.7 (also logged in for POCAS) - Remove TPH/BTEX/PAH/8 METALS analyses, analyse for SPOCAS only.

CBH116 0.5-0.7 - Do not analyse

CBH129 1.5-1.7 - Do not analyse

CBH129 2.85-2.9 (BEING ONLY 1/8 FULL) - Do not analyse

The following samples listed on the original COC (27318) sampled on the 10/3/05 should be renamed:

FROM	TO
CBH111 0.0-0.2	CBH121 0.0-0.2
CBH111 0.5-0.95	CBH121 0.5-0.95
CBH111 1.5-1.9	CBH121 1.5-1.9
CBH111 2.5-2.95	CBH121 2.5-2.95
CBH110 0-0.2	CBH120 0-0.2
CBH110 0.5-0.95	CBH120 0.5-0.95
CBH110 1.5-1.95	CBH120 1.5-1.95
CBH110 2.5-2.95	CBH110 2.5-2.95

IE all samples listed as CBH111 for that date changed to CBH121, and all samples list as CBH110 for that date changed to CBH120.

In addition, please add the following samples for analysis:

CBH119 3.5-3.95 - TPH/BTEX/PAH and 8 Metals E183514

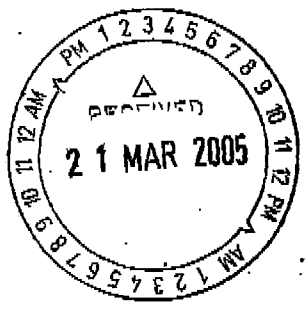
CBH119 1.5-1.95 - TPH/VOC/PAH/8 Metals E183512

5E0952 A

Regards

Strider Duerinckx

Coffey Geosciences Pty Ltd
ACN 056 335 516; ABN 57 056 335 516
Gosford Office
Unit 17 Mt Penang Parklands, KARIONG NSW 2250
Telephone +61 2 43401811
Facsimile +61 2 43401411
Email strider_duerinckx@coffey.com.au
Web Site http://www.coffey.com.au/)
NB



amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0959
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	14
Reference/Order	:	E12723/4/30607
Project	:	E12723/4 AREA B
Received Samples	:	11/03/05
Instructions	:	17/03/05
Date Reported	:	30/03/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0959

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	21/03/05	21/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	21/03/05	24/03/05	GTO	094
E1221	TPH (C10-C36)	21/03/05	22/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	21/03/05	24/03/05	GTO	094
E5910	Metals by ICP-AES	22/03/05	23/03/05	DLU	093
E5950	Mercury in Soil	22/03/05	22/03/05	DLU	093
E1290	Volatile Organic Compounds	21/03/05	22/03/05	GTO	094
E1110	Polycyclic Aromatic Hydrocarbons	21/03/05	23/03/05	MFA	095
E0230	TPH C6-C9 by purge & trap	18/03/05	18/03/05	GTO	094
E0221F	TPH (C10-C36)	18/03/05	19/03/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	18/03/05	18/03/05	GTO	094
E4970	Total Metals by ICP-MS	18/03/05	18/03/05	DLU	093
E4950	Mercury	18/03/05	18/03/05	DLU	093
E0110	Polycyclic Aromatic Hydrocarbons	18/03/05	19/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183598	E183599	E183600	E183602	E183604
		CBH122	CBH122	CBH123	CBH123	CBH76
	Sample Id	0.2-0.3	0.5-0.7	0.2-0.3	1.5-1.7	0.2-0.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	4%	5%	3%	12%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	80
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	nd	--	nd
Toluene	1	nd	--	nd	--	nd
Ethylbenzene	1	nd	--	nd	--	nd
m&p-Xylene	2	nd	--	nd	--	nd
o-Xylene	1	nd	--	nd	--	nd
4-Bromofluorobenzene-SURROGATE	1	101%	--	118%	--	100%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183605	E183606	E183607		
		CBH76	CBH75	CBH75		
	Sample Id	0.7-0.85	0.2-0.3	0.6-0.7		
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	17%	11%	14%		
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd		
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd		
C15-C28 Fraction	50	140	80	100		
C29-C36 Fraction	50	90	60	70		
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd		
Toluene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
m&p-Xylene	2	nd	nd	nd		
o-Xylene	1	nd	nd	nd		
4-Bromofluorobenzene-SURROGATE	1	102%	100%	108%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183598	E183599	E183600	E183602	E183604
		CBH122	CBH122	CBH123	CBH123	CBH76
	Sample Id	0.2-0.3	0.5-0.7	0.2-0.3	1.5-1.7	0.2-0.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	nd	nd	nd	nd	10
Nickel	2	nd	nd	nd	nd	3
Lead	5	nd	nd	9	8	47
Zinc	5	nd	nd	13	nd	53
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183605	E183606	E183607		
		CBH76	CBH75	CBH75		
	Sample Id	0.7-0.85	0.2-0.3	0.6-0.7		
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd		
Cadmium	0.5	nd	nd	nd		
Chromium	5	nd	nd	14		
Copper	5	8	12	13		
Nickel	2	nd	4	19		
Lead	5	25	58	25		
Zinc	5	27	77	67		
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	0.06		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183599	E183602			
		CBH122	CBH123			
	Sample Id	0.5-0.7	1.5-1.7			
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd			
Bromobenzene	1	nd	nd			
Bromochloromethane	1	nd	nd			
Bromodichloromethane	1	nd	nd			
Bromoform	1	nd	nd			
Bromomethane	1	nd	nd			
n-Butylbenzene	1	nd	nd			
sec-Butylbenzene	1	nd	nd			
tert-Butylbenzene	1	nd	nd			
Carbon tetrachloride	1	nd	nd			
Chlorobenzene	1	nd	nd			
Chloroethane	1	nd	nd			
Chloroform	1	nd	nd			
Chloromethane	1	nd	nd			
2-Chlorotoluene	1	nd	nd			
4-Chlorotoluene	1	nd	nd			
Dibromochloromethane	1	nd	nd			
1.2-Dibromo-3-chloropropane	1	nd	nd			
1.2-Dibromoethane (EDB)	1	nd	nd			
Dibromomethane	1	nd	nd			
1.2-Dichlorobenzene	1	nd	nd			
1.3-Dichlorobenzene	1	nd	nd			
1.4-Dichlorobenzene	1	nd	nd			
Dichlorodifluoromethane	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183599	E183602			
		CBH122	CBH123			
	Sample Id	0.5-0.7	1.5-1.7			
	PQL					
1.1-Dichloroethene	1	nd	nd			
1.2-Dichloroethane	1	nd	nd			
1.1-Dichloroethane	1	nd	nd			
cis-1.2-Dichloroethene	1	nd	nd			
trans-1.2-Dichloroethene	1	nd	nd			
1.2-Dichloropropane	1	nd	nd			
1.3-Dichloropropane	1	nd	nd			
2.2-Dichloropropane	1	nd	nd			
1.1-Dichloropropylene	1	nd	nd			
cis-1.3-Dichloropropylene	1	nd	nd			
trans-1.3-Dichloropropylene	1	nd	nd			
Ethylbenzene	1	nd	nd			
Hexachlorobutadiene	1	nd	nd			
Isopropylbenzene	1	nd	nd			
p-Isopropyltoluene	1	nd	nd			
Methylene chloride	1	2	3			
Naphthalene	1	nd	nd			
n-Propylbenzene	1	nd	nd			
Styrene	1	nd	nd			
1.1.1.2-Tetrachloroethane	1	nd	nd			
1.1.2.2-Tetrachloroethane	1	nd	nd			
Tetrachloroethene	1	nd	nd			
Toluene	1	nd	nd			
1.2.3-Trichlorobenzene	1	nd	nd			
1.2.4-Trichlorobenzene	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183599	E183602			
		CBH122	CBH123			
	Sample Id	0.5-0.7	1.5-1.7			
	PQL					
1.1.1-Trichloroethane	1	nd	nd			
1.1.2-Trichloroethane	1	nd	nd			
Trichloroethene	1	nd	nd			
Trichlorofluoromethane	1	nd	nd			
1.2.3-Trichloropropane	1	nd	nd			
1.2.4-Trimethylbenzene	1	nd	nd			
1.3.5-Trimethylbenzene	1	nd	nd			
Vinyl chloride	1	nd	nd			
ortho-Xylene	1	nd	nd			
meta- & para-Xylene	2	nd	nd			
Pentafluorobenzene-SURROGATE	1	100%	99%			
Toluene-D8-SURROGATE	1	100%	100%			
4-Bromofluorobenzene-SURROGATE	1	98%	99%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183598	E183599	E183600	E183602	E183604
		CBH122	CBH122	CBH123	CBH123	CBH76
	Sample Id	0.2-0.3	0.5-0.7	0.2-0.3	1.5-1.7	0.2-0.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	1.0
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	2.2
Pyrene	0.5	nd	nd	nd	nd	2.6
Benz(a)anthracene	0.5	nd	nd	nd	nd	1.4
Chrysene	0.5	nd	nd	nd	nd	1.2
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	3
Benzo(a)pyrene	0.5	nd	nd	nd	nd	1.6
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	1.4
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	1.2
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	15
2-Fluorobiphenyl-SURROGATE	1	100%	86%	87%	92%	94%
Anthracene-d10-SURROGATE	1	108%	99%	96%	100%	95%
p-Terphenyl-D14-SURROGATE	1	108%	97%	96%	100%	101%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30607
Project : E12723/4 AREA B

Analyte	Lab No	E183605	E183606	E183607		
		CBH76	CBH75	CBH75		
	Sample Id	0.7-0.85	0.2-0.3	0.6-0.7		
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd		
Acenaphthylene	0.5	nd	nd	nd		
Acenaphthene	0.5	nd	nd	nd		
Fluorene	0.5	nd	nd	nd		
Phenanthrene	0.5	1.4	nd	0.7		
Anthracene	0.5	nd	nd	nd		
Fluoranthene	0.5	4.4	1.6	2.0		
Pyrene	0.5	5.2	1.8	2.2		
Benz(a)anthracene	0.5	3.2	1.0	1.4		
Chrysene	0.5	2.8	1.0	1.2		
Benzo(b) & (k)fluoranthene	1	5	2	3		
Benzo(a)pyrene	0.5	3.6	1.4	1.6		
Indeno(1.2.3-cd)pyrene	0.5	2.4	1.2	1.2		
Dibenz(a.h)anthracene	0.5	nd	nd	nd		
Benzo(g.h.i)perylene	0.5	2.2	1.0	1.2		
Total USEPA Priority PAHs	0.5	31	11	14		
2-Fluorobiphenyl-SURROGATE	1	89%	90%	95%		
Anthracene-d10-SURROGATE	1	89%	93%	97%		
p-Terphenyl-D14-SURROGATE	1	94%	97%	102%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183609	E183610			
		TB				
	Sample Id	11.3.05	TS			
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	--			
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	--			
C15-C28 Fraction	100	nd	--			
C29-C36 Fraction	100	nd	--			
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	10			
Toluene	1	nd	9			
Ethylbenzene	1	nd	9			
m&p-Xylene	2	nd	19			
o-Xylene	1	nd	10			
4-Bromofluorobenzene-SURROGATE	1	88%	102%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183609				
		TB				
	Sample Id	11.3.05				
	PQL					
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0959

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30607

Project : E12723/4 AREA B

Analyte	Lab No	E183609				
		TB				
	Sample Id	11.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	85%				
Anthracene-D10-SURROGATE	1	89%				
p-Terphenyl-D14-SURROGATE	1	91%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5581/ 8105 / 1 - 2
Your ref: 5E0959
NATA Accreditation No: 14484

23 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of two samples, forwarded by Amdel Laboratories Ltd, on 22 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5581 / 8105 / 1. 5E0959 - CBH122_0.2-0.3 - E183598.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5581 / 8105 / 2. 5E0959 - CBH76_0.2-0.3 - E183604.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of cement.
No asbestos detected.

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0959

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0959

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0959

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183598)							
C6-C9 Fraction	100	110		105%			
E1221 TPH in Soil (E183599)							
C10-C14 Fraction							
C15-C28 Fraction	550	440		79%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E183598)							
Benzene	10	12		119%			
Toluene	10	12		117%			
Ethylbenzene	10	11		105%			
m&p-Xylene	20	20		102%			
o-Xylene	10	11		110%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	98			98%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	440			79%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.8			98%		
Toluene	10	10			98%		
Ethylbenzene	10	9			91%		
m&p-Xylene	20	18			89%		
o-Xylene	10	10			95%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183598)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E183599)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E183598)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E183598)							
Arsenic	50	45		91%			
Cadmium	50	46		92%			
Chromium	50	49		99%			
Copper	50	52		105%			
Nickel	50	48		97%			
Lead	50	47		94%			
Zinc	50	47		94%			
E5950 Mercury in Soil (E183598)							
Mercury	0.50	0.50		101%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	48			95%		
Cadmium	50	48			96%		
Chromium	50	52			104%		
Copper	50	52			105%		
Nickel	50	51			102%		
Lead	50	50			99%		
Zinc	50	49			97%		
E5950 Mercury in Soil							
Mercury	0.50	0.48			97%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E183598)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	nd	nd						
Nickel	nd	nd						
Lead	nd	nd						
Zinc	nd	nd						
E5950 Mercury in Soil (E183598,E183599)								
Mercury	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.6			96%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			105%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			94%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			93%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10						
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride		9					
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E183599)							
Naphthalene	5	4.2		85%			
Acenaphthylene	5	4.2		83%			
Acenaphthene	5	4.4		87%			
Fluorene	5	4.2		85%			
Phenanthrene	5	4.2		85%			
Anthracene	5	4.4		86%			
Fluoranthene	5	4.2		85%			
Pyrene	5	4.2		85%			
Benz(a)anthracene	5	4.0		80%			
Chrysene	5	4.2		84%			
Benzo(b) & (k)fluoranthene	10	8		81%			
Benzo(a)pyrene	5	4.0		80%			
Indeno(1.2.3-cd)pyrene	5	3.8		75%			
Dibenz(a.h)anthracene	5	4.0		79%			
Benzo(g.h.i)perylene	5	4.2		84%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			81%		
Acenaphthylene	5	4.0			81%		
Acenaphthene	5	4.2			83%		
Fluorene	5	4.2			82%		
Phenanthrene	5	4.2			82%		
Anthracene	5	4.0			81%		
Fluoranthene	5	4.0			80%		
Pyrene	5	4.0			81%		
Benz(a)anthracene	5	3.8			78%		
Chrysene	5	4.0			79%		
Benzo(b) & (k)fluoranthene	10	8			80%		
Benzo(a)pyrene	5	4.0			79%		
Indeno(1.2.3-cd)pyrene	5	3.8			77%		
Dibenz(a.h)anthracene	5	3.8			78%		
Benzo(g.h.i)perylene	5	4.2			82%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E183599)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	180			90%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	4650			85%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	10			99%		
Toluene	10	10			95%		
Ethylbenzene	10	9			88%		
m&p-Xylene	20	19			93%		
o-Xylene	10	10			98%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4970 Total Recoverable Metals in Waters							
Arsenic	0.100	0.104			104%		
Cadmium	0.100	0.11			112%		
Chromium	0.100	0.097			97%		
Copper	0.100	0.095			95%		
Nickel	0.100	0.097			97%		
Lead	0.100	0.113			113%		
Zinc	0.100	0.09			92%		
E4950 Total Recoverable Mercury in Water							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0959

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	7			73%		
Acenaphthylene	10	8			82%		
Acenaphthene	10	8			77%		
Fluorene	10	8			83%		
Phenanthrene	10	8			80%		
Anthracene	10	8			79%		
Fluoranthene	10	8			83%		
Pyrene	10	8			84%		
Benz(a)anthracene	10	8			77%		
Chrysene	10	9			91%		
Benzo(b) & (k)fluoranthene	20	17			85%		
Benzo(a)pyrene	10	7			72%		
Indeno(1.2.3-cd)pyrene	10	7			74%		
Dibenz(a.h)anthracene	10	8			82%		
Benzo(g.h.i)perylene	10	8			85%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30607
Project:	E12723/4 AREA B
Our Reference Number :	5E0959
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	8	
Volatile Organic Compounds	E1290	2	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	8	are typically 3-5 working
Benzene,Toluene,Ethylbenzene & Xylene	E1010	6	days.
TPH (C10-C36)	E1221	8	
Metals by ICP-AES	E5910	8	
Mercury in Soil	E5950	8	
Polycyclic Aromatic Hydrocarbons	E1110	8	
TPH C6-C9 by purge & trap	E0230	1	
TPH (C10-C36)	E0221F	1	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	2	
Total Metals by ICP-MS	E4970	1	
Mercury	E4950	1	
Polycyclic Aromatic Hydrocarbons	E0110	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	(NO)
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30607
Project:	E12723/4 AREA B
Our Reference Number :	5E0959
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Asbestos	E8110	2	
Samples on Hold (Soil)	E7600	3	Amdel's turnaround times are typically 3-5 working days.
Australian GST	GST		

QCNOTE10

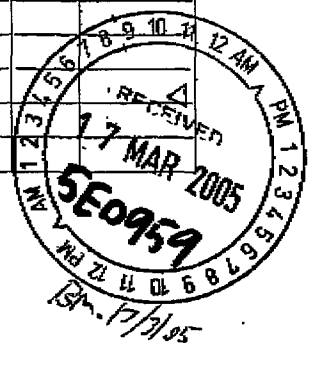
Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	NO
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Area	Sample ID	Date Collected	Comments	Analysis						
				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
Area B	CBH87 0.0-0.3	10/03/2005				1	1			1
	CBH87 0.5-0.7	10/03/2005		1			1			
	CBH88 0.0-0.3	10/03/2005				1	1			1
	CBH88 0.3-0.5	10/03/2005								
	CBH88 0.5-0.8	10/03/2005		1			1			
	CBH88 1.5-1.8	10/03/2005								
	CBH89 0.0-0.3	10/03/2005				1	1			1
	CBH89 0.5-1.0	10/03/2005		1			1			
	CBH89 1.5-1.7	10/03/2005	Not listed on COC							
	CBH91 0.0-0.1	10/03/2005		1			1	1	1	1
	CBH91 0.5-0.6	10/03/2005		1			1			
	CBH94 0.2-0.3	10/03/2005		1			1			1
	CBH94 0.8-1.0	10/03/2005				1	1			
	DUPB1	10/03/2005		1			1			
	DUPB2	10/03/2005	ALS							
	DUPB3	10/03/2005								
	DUPB4	10/03/2005	ALS							
	TS	10/03/2005								
	TB	10/03/2005								
606	CBH75 0.2-0.3	11/03/2005		1			1			
607	CBH75 0.6-0.7	11/03/2005		1			1			
604	CBH76 0.2-0.3	11/03/2005		1			1			1
605	CBH76 0.7-0.85	11/03/2005		1			1			
E183598	CBH122 0.2-0.3	11/03/2005		1			1			1
599	CBH122 0.5-0.7	11/03/2005				1	1			
600	CBH123 0.2-0.3	11/03/2005		1			1			
601	CBH123 0.5-0.7	11/03/2005								
602	CBH123 1.5-1.7	11/03/2005				1	1			
603	CBH123 2.0-2.2	11/03/2005								
608	DUPB5	11/03/2005								
	DUPB6	11/03/2005	ALS on original COC							



E183609	WB	11/03/2005	Listed on COC as TB	1			1			
	TB 11.3.05	11/03/2005	Not Listed on COC		1					
E183610	TS	11/03/2005			1					
	ASBESTOS 1	14/03/2005								1
	ASBESTOS 2	14/03/2005								1
	ASBESTOS 3	14/03/2005								1
			No. of Analyses	14	2	6	20	1	1	10

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

BR
17/3/05

Log AREA 6 IN SEPARATE TO AREA B

AREA B

Chain of Custody

Laboratory Quotation / Order No: PE/Coffey Quote Job No: EL2723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: STRIDER DULRINGAN	Consigning Office: SYDNEY Date Dispatched: 11-3-05
Attention: JULIE EDMAN	Project Manager: (report results to) ANNE NORTHWAY ANNE_NORTHWAY@COFFEY.COM.AU	Courier Service: AMDEL PICKUP Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	11 3 05	4PM	Emily Brett Smith	11/3	2.00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sampler's Condition on Receipt
E183598	SOIL	GLASS	CBH17 0.2-0.3	11 2 05					
599			CBH12 0.5-0.7						
600			CBH12 0.2-0.3						
01			CBH23 0.5-0.7						
02			CBH23 1.5-1.7						
03			CBH23 2.0-2.2						
04			CBH76 0.2-0.3						
05			CBH76 0.7-0.85						
06			CBH75 0.2-0.3						
07			CBH75 0.6-0.7				HOLD FOR FURTHER ANALYSIS		
08			DUP B5						
09			DUP B6				SEND TO ALS ADELAIDE		
1009			TB 11.3.05						
E183457 10			TS						

1 MAR 2005 5600159

E183987 WB 11/3/5 - received at Amdel

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0960
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	39
Reference/Order	:	E12723/4/27319-21
Project	:	E12723/4 AREA D
Received Samples	:	11/03/05
Instructions	:	17/03/05
Date Reported	:	01/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0960

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	23/03/05	23/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	22/03/05	31/03/05	GTO	094
E1221	TPH (C10-C36)	22/03/05	23/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	22/03/05	31/03/05	GTO	094
E5910	Metals by ICP-AES	24/03/05	24/03/05	DLU	093
E5950	Mercury in Soil	24/03/05	24/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	01/04/05	26/03/05	MFA	095
E1080	Organochlorine Pesticides	22/03/05	23/03/05	MFA	095
E1290	Volatile Organic Compounds	22/03/05	23/03/05	GTO	094
E0230	TPH C6-C9 by purge & trap	21/03/05	21/03/05	GTO	094
E0221F	TPH (C10-C36)	24/03/05	30/03/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	21/03/05	21/03/05	GTO	094
E4970	Total Metals by ICP-MS	18/03/05	18/03/05	DLU	093
E4950	Mercury	18/03/05	18/03/05	DLU	093
E0110	Polycyclic Aromatic Hydrocarbons	24/03/05	29/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183611	E183614	E183616	E183618	E183620
		CBH117	CBH117	CBH118	CBH118	CBH115
	Sample Id	0.0-0.2	2.5-2.95	0.5-0.8	2.5-2.95	1.0-1.95
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	16%	6%	19%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	80	nd	80	120	nd
C29-C36 Fraction	50	50	nd	60	70	60
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	--
Toluene	1	nd	nd	nd	nd	--
Ethylbenzene	1	nd	nd	nd	nd	--
m&p-Xylene	2	nd	nd	nd	nd	--
o-Xylene	1	nd	nd	nd	nd	--
4-Bromofluorobenzene-SURROGATE	1	104%	79%	81%	100%	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183621	E183624	E183626	E183629	E183630
		CBH115	CBH111	CBH111	CBH110	CBH110
	Sample Id	2.7-3.1	0.0-0.2	2.5-3.3	0.5-0.95	2.0-2.45
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	12%	5%	22%	8%	3%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	nd	nd	nd
Toluene	1	nd	--	nd	nd	nd
Ethylbenzene	1	nd	--	nd	nd	nd
m&p-Xylene	2	nd	--	nd	nd	nd
o-Xylene	1	nd	--	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	121%	--	97%	73%	102%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183632	E183633	E183634	E183637	E183638
		CBH113	CBH113	CBH114	CBH114	DUP_D4
	Sample Id	1.0-1.45	2.0-2.4	0.0-0.2	2.3-2.75	11.3.05
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	14%	8%	5%	9%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	60	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	nd	nd	nd	nd
Toluene	1	--	nd	nd	nd	nd
Ethylbenzene	1	--	nd	nd	nd	nd
m&p-Xylene	2	--	nd	nd	nd	nd
o-Xylene	1	--	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	--	75%	76%	73%	77%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183640	E183641	E183643	E183646	
		CBH95	CBH95	CBH96	CBH96	
	Sample Id	0.7-1.15	2.5-2.95	0.05-0.2	3.5-3.95	
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	9%	6%	20%	
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	
C15-C28 Fraction	50	nd	nd	160	nd	
C29-C36 Fraction	50	nd	nd	300	nd	
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	
Toluene	1	nd	nd	nd	nd	
Ethylbenzene	1	nd	nd	nd	nd	
m&p-Xylene	2	nd	nd	nd	nd	
o-Xylene	1	nd	nd	nd	nd	
4-Bromofluorobenzene-SURROGATE	1	97%	72%	95%	80%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

Analyte	Lab No	E183611	E183614	E183616	E183618	E183620
		CBH117	CBH117	CBH118	CBH118	CBH115
	Sample Id	0.0-0.2	2.5-2.95	0.5-0.8	2.5-2.95	1.0-1.95
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	0.6
Chromium	5	8	nd	7	6	nd
Copper	5	14	nd	13	15	9
Nickel	2	10	nd	4	6	5
Lead	5	54	nd	62	69	32
Zinc	5	73	nd	84	110	150
E5950 Mercury in Soil						
Mercury	0.05	0.09	nd	0.12	0.07	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183621	E183624	E183626	E183629	E183630
		CBH115	CBH111	CBH111	CBH110	CBH110
	Sample Id	2.7-3.1	0.0-0.2	2.5-3.3	0.5-0.95	2.0-2.45
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	9	6	nd	33	nd
Copper	5	16	12	nd	19	nd
Nickel	2	6	4	nd	7	nd
Lead	5	66	31	nd	45	nd
Zinc	5	140	49	nd	110	8
E5950 Mercury in Soil						
Mercury	0.05	0.09	0.08	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183632	E183633	E183634	E183637	E183638
		CBH113	CBH113	CBH114	CBH114	DUP_D4
	Sample Id	1.0-1.45	2.0-2.4	0.0-0.2	2.3-2.75	11.3.05
	PQL					
E5910 Metals in Soil						
Arsenic	5	6	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	10	nd	5	nd	6
Copper	5	17	nd	17	nd	37
Nickel	2	3	2	6	nd	5
Lead	5	120	nd	40	nd	58
Zinc	5	99	31	70	nd	120
E5950 Mercury in Soil						
Mercury	0.05	0.08	nd	0.07	nd	0.07

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183640	E183641	E183643	E183646	
		CBH95	CBH95	CBH96	CBH96	
	Sample Id	0.7-1.15	2.5-2.95	0.05-0.2	3.5-3.95	
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	
Cadmium	0.5	nd	nd	nd	nd	
Chromium	5	nd	nd	nd	nd	
Copper	5	64	nd	160	nd	
Nickel	2	4	nd	7	nd	
Lead	5	38	nd	9	nd	
Zinc	5	81	93	44	18	
E5950 Mercury in Soil						
Mercury	0.05	0.18	0.06	nd	nd	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

	Lab No	E183611	E183614	E183616	E183618	E183620
		CBH117	CBH117	CBH118	CBH118	CBH115
Analyte	Sample Id	0.0-0.2	2.5-2.95	0.5-0.8	2.5-2.95	1.0-1.95
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.6	nd	0.5	0.6	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	1.4	nd	1.2	1.2	nd
Pyrene	0.5	1.4	nd	1.2	1.4	nd
Benz(a)anthracene	0.5	0.7	nd	0.6	0.7	nd
Chrysene	0.5	0.6	nd	0.6	0.7	nd
Benzo(b) & (k)fluoranthene	1	1	nd	1	1	nd
Benzo(a)pyrene	0.5	0.7	nd	0.7	0.8	nd
Indeno(1.2.3-cd)pyrene	0.5	0.6	nd	nd	0.5	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	0.5	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	7.8	nd	6.0	7.2	nd
2-Fluorobiphenyl-SURROGATE	1	102%	97%	89%	91%	97%
Anthracene-d10-SURROGATE	1	98%	102%	89%	92%	101%
p-Terphenyl-D14-SURROGATE	1	100%	100%	90%	93%	102%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

	Lab No	E183621	E183624	E183626	E183629	E183630
		CBH115	CBH111	CBH111	CBH110	CBH110
Analyte	Sample Id	2.7-3.1	0.0-0.2	2.5-3.3	0.5-0.95	2.0-2.45
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.8	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	1.4	nd	nd	0.6	nd
Pyrene	0.5	1.4	nd	nd	0.6	nd
Benz(a)anthracene	0.5	0.7	nd	nd	nd	nd
Chrysene	0.5	0.6	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	1	nd	nd	nd	nd
Benzo(a)pyrene	0.5	0.7	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	0.5	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	7.2	nd	nd	1.2	nd
2-Fluorobiphenyl-SURROGATE	1	81%	92%	94%	92%	109%
Anthracene-d10-SURROGATE	1	83%	93%	97%	96%	115%
p-Terphenyl-D14-SURROGATE	1	82%	95%	97%	96%	114%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183632	E183633	E183634	E183637	E183638
		CBH113	CBH113	CBH114	CBH114	DUP_D4
	Sample Id	1.0-1.45	2.0-2.4	0.0-0.2	2.3-2.75	11.3.05
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	1.8	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.5	nd	3.2	nd	0.8
Pyrene	0.5	0.6	nd	3.4	nd	1.0
Benz(a)anthracene	0.5	nd	nd	1.4	nd	nd
Chrysene	0.5	nd	nd	1.4	nd	0.5
Benzo(b) & (k)fluoranthene	1	nd	nd	2	nd	nd
Benzo(a)pyrene	0.5	nd	nd	1.6	nd	0.5
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	1.2	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	1.0	nd	nd
Total USEPA Priority PAHs	0.5	1.2	nd	17	nd	2.8
2-Fluorobiphenyl-SURROGATE	1	71%	91%	98%	93%	94%
Anthracene-d10-SURROGATE	1	71%	94%	98%	97%	95%
p-Terphenyl-D14-SURROGATE	1	71%	93%	100%	98%	97%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183640	E183641	E183643	E183646	
		CBH95	CBH95	CBH96	CBH96	
	Sample Id	0.7-1.15	2.5-2.95	0.05-0.2	3.5-3.95	
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	
Acenaphthylene	0.5	nd	nd	nd	nd	
Acenaphthene	0.5	nd	nd	nd	nd	
Fluorene	0.5	nd	nd	nd	nd	
Phenanthrene	0.5	nd	nd	nd	nd	
Anthracene	0.5	nd	nd	nd	nd	
Fluoranthene	0.5	0.6	nd	nd	nd	
Pyrene	0.5	0.7	nd	nd	nd	
Benz(a)anthracene	0.5	nd	nd	nd	nd	
Chrysene	0.5	nd	nd	nd	nd	
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	
Benzo(a)pyrene	0.5	nd	nd	nd	nd	
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	
Total USEPA Priority PAHs	0.5	1.2	nd	nd	nd	
2-Fluorobiphenyl-SURROGATE	1	116%	100%	82%	86%	
Anthracene-d10-SURROGATE	1	125%	104%	81%	93%	
p-Terphenyl-D14-SURROGATE	1	104%	103%	85%	92%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

Analyte	Lab No	E183629	E183643			
		CBH110	CBH96			
	Sample Id	0.5-0.95	0.05-0.2			
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd			
a-BHC	0.1	nd	nd			
g-BHC	0.1	nd	nd			
Heptachlor	0.1	nd	nd			
Aldrin	0.1	nd	nd			
b-BHC	0.1	nd	nd			
d-BHC	0.1	nd	nd			
Oxychlordane	0.1	nd	nd			
Heptachlor epoxide	0.1	nd	nd			
Endosulfan 1	0.1	nd	nd			
Chlordane-Trans	0.1	nd	nd			
Chlordane-Cis	0.1	nd	nd			
trans-Nonachlor	0.1	nd	nd			
DDE	0.1	nd	nd			
Dieldrin	0.1	nd	nd			
Endrin	0.1	nd	nd			
DDD	0.1	nd	nd			
Endosulfan 2	0.1	nd	nd			
DDT	0.1	nd	nd			
Endosulfan sulfate	0.1	nd	nd			
Methoxychlor	0.1	nd	nd			
2.4.5.6-TCMX-SURROGATE	1	101%	100%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

Analyte	Lab No	E183620	E183624	E183632		
		CBH115	CBH111	CBH113		
	Sample Id	1.0-1.95	0.0-0.2	1.0-1.45		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183620	E183624	E183632		
		CBH115	CBH111	CBH113		
	Sample Id	1.0-1.95	0.0-0.2	1.0-1.45		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183620	E183624	E183632		
		CBH115	CBH111	CBH113		
	Sample Id	1.0-1.95	0.0-0.2	1.0-1.45		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Trichlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	86%	87%	85%		
Toluene-D8-SURROGATE	1	100%	100%	100%		
4-Bromofluorobenzene-SURROGATE	1	99%	98%	97%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27319-21
Project : E12723/4 AREA D

Analyte	Lab No	E183647	E183648	E183649		
			WB	TB		
	Sample Id	TS	11.3.05	11.3.05		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	nd	--		
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	nd	--		
C15-C28 Fraction	100	--	nd	--		
C29-C36 Fraction	100	--	nd	--		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	11	nd	nd		
Toluene	1	11	nd	nd		
Ethylbenzene	1	10	nd	nd		
m&p-Xylene	2	21	nd	nd		
o-Xylene	1	11	nd	nd		
4-Bromofluorobenzene-SURROGATE	1	112%	91%	89%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

Analyte	Lab No	E183648				
		WB				
	Sample Id	11.3.05				
	PQL					
E4970 Total Recoverable Metals in Waters						
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	0.03				
Arsenic	0.002	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0960

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27319-21

Project : E12723/4 AREA D

Analyte	Lab No	E183648				
		WB				
	Sample Id	11.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	80%				
Anthracene-D10-SURROGATE	1	82%				
p-Terphenyl-D14-SURROGATE	1	84%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5580/ 8104 / 1 - 8
Your ref: 5E0960
NATA Accreditation No: 14484

24 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of eight samples, forwarded by Amdel Laboratories Ltd, on 22 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5580 / 8104 / 1. 5E0960 - CBH117 - E183611.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5580 / 8104 / 2. 5E0960 - CBH118 - E183616.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter fragments of cement and glass.
No asbestos detected.

Sample No, 3. ASET5580 / 8104 / 3. 5E0960 - CBH115 - E183620.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 4. ASET5580 / 8104 / 4. 5E0960 - CBH111 - E183624.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET5580 / 8104 / 5. 5E0960 - CBH110 - E183629.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 6. ASET5580 / 8104 / 6. 5E0960 - CBH113 - E183632.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

Sample No. 7. ASET5580 / 8104 / 7. 5E0960 - CBH114 - E183634.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 8. ASET5580 / 8104 / 8. 5E0960 - CHB95 - E183640.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of cement and bitumen.
No asbestos detected.

NATA Accredited Laboratory Number:

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 56 625 960 402
999 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 8800 Fax (03) 9562 0336

Analytical Report

AMDEL ENVIRONMENTAL - SYDNEY
99 Mitchell Road
Cardiff

NSW 2285

Contact	: **BRETT McLENNAM**
Batch Number	: **0503881**
Job Ref	: **5E0960**
Sample(s) Received	: **06/04/2005**
Report No	: **141709**

Methods:

SPOCAS - Acid Nuetralising Capacity (ANCe)#
SPOCAS - Peroxide Oxidisable Sulfur #
SPOCAS - Reacted Calcium #
SPOCAS - Reacted Magnesium #
SPOCAS - Residual Acid Soluble Sulfur #
SPOCAS - Sulfidic Acidity #
SPOCAS Method 23 - TPA, TAA, pH(KCl), pH(ox)#

Attached Results Approved by:

Susan Groth
B.Sc. (Chemistry)
Teamleader - Waters

Anthony Crane
B.App.Sci. (Environmental)
Laboratory Manager

John Levvey
Dip.App.Sci (Chemistry)
Teamleader - Metals

Document may not be reproduced except in full.

**** This is the Final Report which supersedes any reports previously issued relating to the sample(s) included.***
All samples tested as submitted by client.
 # Denotes methods not covered by NATA terms of accreditation

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 56 623 960 402
685 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 5600 Fax (03) 9562 0336

Results

Report No: 141709

	0503881/001 CBH118/2.5-2.95 E183618 Soil 5/04/05	0503881/002 CBH115/2.7-3.1 E183621 Soil 5/04/05
SUSPENSION POCAS		
Method 23 (SPOCAS) Units: As stated		
pH (KCl) extract #	5.8	7.8
pH (ox) Peroxide Extract #	4.1	7.4
Total Actual Acidity #	12.8	<5.0
mol H+/t		
Total Potential Acidity #	45.8	<5.0
mol H+/t		
SUSPENSION POCAS - Peroxide Oxidisable Sulfur		
Method 23 (SPOCAS) Units : %		
Peroxide Oxidisable Sulfur	0.11	0.07
, Spos% #		
SUSPENSION POCAS - Sulfidic Acidity		
Method 23 (SPOCAS) Units : mol H+/t		
Total Sulfidic Acidity #	33	<5
(Acid trail), mol H+/t		
SUSPENSION POCAS- Acid Nuetralising Capacity		
Method 23 (SPOCAS) Units: % CaCO3		
Acid Neutralising #	<0.1	3.5
Capacity		
SUSPENSION POCAS- Reacted Calcium		
Method 23 (SPOCAS) Units : %		
Reactive Calcium #	<0.01	1.11
Ca_a		
SUSPENSION POCAS- Reacted Magnesium		
Method 23 (SPOCAS) Units: %		
Reactive Magnesium	<0.01	0.03
SUSPENSION POCAS- Residual Acid Soluble Sulfur		
Method 23 (SPOCAS) Units %S		
Residual Acid Soluble	0.01	0.01
Sulur #		

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0960

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0960

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0960

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183611,E183631)							
C6-C9 Fraction	100	71		71%			
E1221 TPH in Soil (E183611,E183631)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		84%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E183611,E183631)							
Benzene	10	7.8		78%			
Toluene	10	8		80%			
Ethylbenzene	10	8		77%			
m&p-Xylene	20	15		76%			
o-Xylene	10	8		82%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	97			97%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	500			89%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	11			108%		
Toluene	10	11			108%		
Ethylbenzene	10	10			100%		
m&p-Xylene	20	18			90%		
o-Xylene	10	10			101%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

Job Number : 5E0960

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E183611,E183614)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E183611,E183614)								
C10-C14 Fraction	nd	nd			nd	nd		
C15-C28 Fraction	80	80	80	0%	nd	nd		
C29-C36 Fraction	60	50	60	18%	nd	nd		
E1010 BTEX (P&T) in Soil (E183611,E183614)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	nd	nd			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E183611,E183631)							
Arsenic	50	45		90%			
Cadmium	50	45		89%			
Chromium	50	48		96%			
Copper	50	43		86%			
Nickel	50	44		89%			
Lead	50	41		81%			
Zinc	50	39		77%			
E5950 Mercury in Soil (E183611,E183631)							
Mercury	0.50	0.40		79%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	45	45		90%	91%	
Cadmium	50	46	47		91%	93%	
Chromium	50	49	49		98%	99%	
Copper	50	46	46		91%	92%	
Nickel	50	46	47		92%	94%	
Lead	50	45	46		91%	91%	
Zinc	50	46	46		92%	93%	
E5950 Mercury in Soil							
Mercury	0.50	0.42	0.43		85%	85%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

Job Number : 5E0960

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E183611,E183614)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	8	8	8	0%	nd	nd		
Copper	17	14	16	19%	nd	nd		
Nickel	13	10	12	26%	nd	nd		
Lead	52	54	53	3%	nd	nd		
Zinc	91	73	82	21%	nd	nd		
E5950 Mercury in Soil (E183611,E183614)								
Mercury	0.11	0.09	0.10	19%	nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E183611,E183631)							
Naphthalene	5	4.4		88%			
Acenaphthylene	5	4.6		93%			
Acenaphthene	5	4.4		86%			
Fluorene	5	4.4		88%			
Phenanthrene	5	4.2		84%			
Anthracene	5	4.4		87%			
Fluoranthene	5	4.6		93%			
Pyrene	5	4.6		91%			
Benz(a)anthracene	5	4.4		87%			
Chrysene	5	4.2		83%			
Benzo(b) & (k)fluoranthene	10	9		92%			
Benzo(a)pyrene	5	5.0		100%			
Indeno(1.2.3-cd)pyrene	5	5.2		106%			
Dibenz(a.h)anthracene	5	4.6		91%			
Benzo(g.h.i)perylene	5	4.4		89%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.2			86%		
Acenaphthylene	5	4.4			88%		
Acenaphthene	5	4.4			87%		
Fluorene	5	4.4			87%		
Phenanthrene	5	4.4			88%		
Anthracene	5	4.4			89%		
Fluoranthene	5	4.4			88%		
Pyrene	5	4.4			88%		
Benz(a)anthracene	5	4.0			81%		
Chrysene	5	4.4			87%		
Benzo(b) & (k)fluoranthene	10	8			84%		
Benzo(a)pyrene	5	4.2			82%		
Indeno(1.2.3-cd)pyrene	5	4.2			85%		
Dibenz(a.h)anthracene	5	4.4			88%		
Benzo(g.h.i)perylene	5	4.6			92%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E183611)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	0.5	0.6	0.6	18%				
Anthracene	nd	nd						
Fluoranthene	1.4	1.4	1.4	0%				
Pyrene	1.4	1.4	1.4	0%				
Benz(a)anthracene	0.7	0.7	0.7	0%				
Chrysene	0.6	0.6	0.6	0%				
Benzo(b) & (k)fluoranthene	1	1	1	0%				
Benzo(a)pyrene	0.8	0.7	0.8	13%				
Indeno(1.2.3-cd)pyrene	0.6	0.6	0.6	0%				
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	0.5	0.5	0.5	0%				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			100%		
a-BHC	0.5	0.5			96%		
g-BHC	0.5	0.5			96%		
Heptachlor	0.5	0.5			96%		
Aldrin	0.5	0.5			96%		
b-BHC	0.5	0.5			94%		
d-BHC	0.5	0.5			96%		
Oxychlordane	0.5	0.5			94%		
Heptachlor epoxide	0.5	0.5			94%		
Endosulfan 1	0.5	0.5			94%		
Chlordane-Trans	0.5	0.5			94%		
Chlordane-Cis	0.5	0.5			94%		
trans-Nonachlor	0.5	0.5			94%		
DDE	1	1.0			95%		
Dieldrin	0.5	0.5			94%		
Endrin	0.5	0.5			96%		
DDD	1	1.0			94%		
Endosulfan 2	0.5	0.5			96%		
DDT	1	1.0			96%		
Endosulfan sulfate	0.5	0.5			96%		
Methoxychlor	0.5	0.5			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			90%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	11			108%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			88%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	10			98%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	10			97%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	200			98%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	5040			92%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			105%		
Toluene	10	10			103%		
Ethylbenzene	10	9			95%		
m&p-Xylene	20	20			100%		
o-Xylene	10	11			105%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4970 Total Recoverable Metals in Waters							
Cadmium	0.100	0.097			97%		
Chromium	0.100	0.112			112%		
Copper	0.100	0.097			97%		
Nickel	0.100	0.095			95%		
Lead	0.100	0.096			96%		
Zinc	0.100	0.10			96%		
Arsenic	0.100	0.092			92%		
E4950 Total Recoverable Mercury in Water							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4970 Total Recoverable Metals in Waters						
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
Arsenic	0.002	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0960

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			79%		
Acenaphthylene	10	8			76%		
Acenaphthene	10	8			81%		
Fluorene	10	8			82%		
Phenanthrene	10	8			84%		
Anthracene	10	8			82%		
Fluoranthene	10	8			83%		
Pyrene	10	8			83%		
Benz(a)anthracene	10	7			74%		
Chrysene	10	9			89%		
Benzo(b) & (k)fluoranthene	20	16			80%		
Benzo(a)pyrene	10	7			70%		
Indeno(1.2.3-cd)pyrene	10	7			73%		
Dibenz(a.h)anthracene	10	8			76%		
Benzo(g.h.i)perylene	10	8			80%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 531 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27319-21
Project:	E12723/4 AREA D
Our Reference Number :	5E0960
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	19	
Benzene, Toluene, Ethylbenzene & Xylene	E1010	16	Amdel's turnaround times
Volatile Organic Compounds	E1290	3	are typically 3-5 working
TPH C6-C9 by Purge & Trap	E1250	19	days.
TPH (C10-C36)	E1221	19	
Metals by ICP-AES	E5910	19	
Mercury in Soil	E5950	19	
Polycyclic Aromatic Hydrocarbons	E1110	19	
Organochlorine Pesticides	E1080	2	
Asbestos	E8110	8	
Acid Sulphate Soils	POCAS	2	
Samples on Hold (Soil)	E7600	17	
Benzene, Toluene, Ethylbenzene & Xylene	E0010	3	
TPH C6-C9 by purge & trap	E0230	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 11/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27319-21
Project:	E12723/4 AREA D
Our Reference Number :	5E0960
Date Received by Amdel :	11/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
TPH (C10-C36)	E0221F	1	
Total Metals by ICP-MS	E4970	1	Amdel's turnaround times
Mercury	E4950	1	are typically 3-5 working
Polycyclic Aromatic Hydrocarbons	E0110	1	days.
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

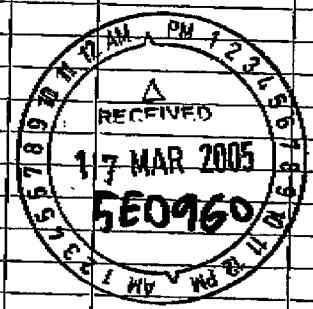
** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Area	Sample ID	Date Collected	COMMENTS	Analysis						
				TPH/PTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	Asbestos	SPOCAS
AREA D	CBH97 0.0-0.2	10/03/2005		1			1	1	1	
	CBH97 0.5-0.95	10/03/2005		1			1			
	CBH97 1.5-1.95	10/03/2005								
	CBH97 3.5-3.8	10/03/2005								
	CBH112 0.0-0.2	10/03/2005								
	CBH112 0.5-0.95	10/03/2005		1			1		1	
	CBH112 1.5-1.95	10/03/2005								
	CBH112 2.5-2.95	10/03/2005		1			1			
	CBH112 4.0-4.2	10/03/2005								
	CBH116 0.0-0.2	10/03/2005		1			1	1	1	
	CBH116 0.5-0.7	10/03/2005				1	1			
	CBH116 1.5-1.8	10/03/2005		1			1			
	CBH116 2.5-2.95	10/03/2005								
	CBH119 0.0-0.2	10/03/2005								
	CBH119 0.5-0.95	10/03/2005				1	1		1	
	CBH119 1.5-1.95	10/03/2005								
	CBH119 2.5-2.7	10/03/2005		1			1			1
	CBH119 3.5-3.95	10/03/2005								
	CBH120 0.0-0.2	10/03/2005					1	1	1	
	CBH120 0.5-0.95	10/03/2005				1	1			
	CBH120 1.5-1.95	10/03/2005								
	CBH120 2.5-2.95	10/03/2005		1			1			
	CBH121 0.0-0.2	10/03/2005								
	CBH121 0.5-0.95	10/03/2005		1			1		1	
	CBH121 1.5-1.9	10/03/2005				1	1			
	CBH121 2.5-2.95	10/03/2005		1			1			
	DUPD1	10/03/2005								
	DUPD2	10/03/2005		1			1	1		
	ALS CBH116 0.0-0.2	10/03/2005	ALS							
	TS	10/03/2005								
	TB	10/03/2005								
E183639	CBH95 0.0-0.2	11/03/2005								
40	CBH95 0.7-1.15	11/03/2005		1			1		1	

RECEIVED
17 MAR 2005
5E0960
17/3/05

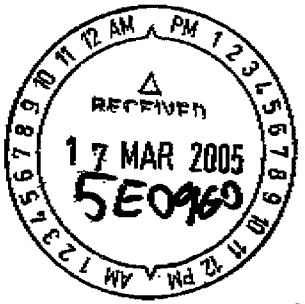
41	CBH95 2.5-2.95	11/03/2005		1			1				
42	CBH95 3.5-3.95	11/03/2005									
43	CBH96 0.05-0.2	11/03/2005		1			1	1			
44	CBH96 0.5-0.95	11/03/2005									
45	CBH96 2.0-2.95	11/03/2005									
46	CBH96 3.5-3.95	11/03/2005		1			1				
28	CBH110 0.0-0.2	11/03/2005									
29	CBH110 0.5-0.95	11/03/2005		1			1	1	1		
30	CBH110 2.0-2.45	11/03/2005		1			1				
24	CBH111 0.0-0.2	11/03/2005				1	1		1		
25	CBH111 1.0-1.95	11/03/2005									
26	CBH111 2.5-3.3	11/03/2005		1			1				
27	CBH111 4.0-4.95	11/03/2005									
31	CBH113 0.0-0.2	11/03/2005									
32	CBH113 1.0-1.45	11/03/2005				1	1		1		
33	CBH113 2.0-2.4	11/03/2005		1			1				
34	CBH114 0.0-0.2	11/03/2005		1			1		1		
35	CBH114 0.5-0.95	11/03/2005									
36	CBH114 1.5-1.95	11/03/2005									
37	CBH114 2.3-2.75	11/03/2005		1			1				
19	CBH115 0.0-0.2	11/03/2005									
20	CBH115 1.0-1.45	11/03/2005				1	1		1		
21	CBH115 2.7-3.1	11/03/2005		1			1			1	
22	CBH115 4.0-4.45	11/03/2005									
E193611	CBH117 0.0-0.2	11/03/2005		1			1		1		
12	CBH117 0.5-0.95	11/03/2005									
13	CBH117 1.5-1.95	11/03/2005									
14	CBH117 2.5-2.95	11/03/2005		1			1				
15	CBH118 0.0-0.2	11/03/2005									
16	CBH118 0.5-0.8	11/03/2005		1			1		1		
17	CBH118 1.5-1.95	11/03/2005									
18	CBH118 2.5-2.95	11/03/2005		1			1			1	
23	DUPD3	11/03/2005									
	ALS D3	11/03/2005	ALS								
38	DUPD4	11/03/2005		1			1				



BM 17/3/05

	ALS-DUPD4	11/03/2005	ALS							
183647	TS	11/03/2005			1					
48	WB 11.3.05	11/03/2005		1			1			
49	TB 11.3.05	11/03/2005			1					
	CBH129 0.0-0.2	14/03/2005				1	1		1	
	CBH129 0.9-0.95	14/03/2005	listed on COC as 0.5-0.95			1	1			
	CBH129 1.5-1.7	14/03/2005								
	CBH129 2.85-2.9	14/03/2005								
	CBH130 0.05-0.2	14/03/2005		1			1	1	1	
	CBH130 1.0-1.5	14/03/2005		1			1			
	CBH131 0.1-0.3	14/03/2005								
	CBH131 0.4-0.6	14/03/2005		1			1		1	
	CBH131 1.5-1.9	14/03/2005		1			1			
	CBH132 0.05-0.2	14/03/2005								
	CBH132 0.5-0.95	14/03/2005		1			1		1	
	CBH132 1.5-1.95	14/03/2005								
	CBH132 2.0-2.45	14/03/2005		1			1			
	CBH133 0.0-0.2	14/03/2005		1			1		1	
	CBH133 0.5-0.7	14/03/2005								
	CBH133 1.5-1.8	14/03/2005		1			1		1	
	DUP1D	14/03/2005		1			1		1	
	DUP2D	14/03/2005	ALS							
	TB 14.3.05	14/03/2005								
	WB 14.3.05	14/03/2005	Move to Area C Batch							
			No. of Analyses	37		9	47	7	21	3

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn



BM 17/3/05

ASET

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref : ASET5688/ 8218 / 1 - 3
Your ref :5E0982
NATA Accreditation No: 14484

13 April 2005

Amdel Laboratories Ltd,
PO Box 514,
Hornsby,
NSW 1630.

Attn:Ms Julie Edman.
Fax No:02 - 49024899

Dear Julie,
This report presents the results of three samples, forwarded by Amdel Laboratories Ltd, on 5 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5688 / 8218 / 1. 5E0982 - E184196.
Approx dimensions 6.0 cm x 4.0 cm x 1.0 cm
The sample consisted of a fragment of a fibre cement material.
Chrysotile asbestos and Amosite asbestos detected.

Sample No. 2. ASET5688 / 8218 / 2. 5E0982 - 5E0982 - 2.
Approx dimensions 3.0 cm x 2.5 cm x 1.0 cm
The sample consisted of a fragment of a fibre cement material.
Chrysotile asbestos and Amosite asbestos detected.

Sample No. 3. ASET5688 / 8218 / 3. 5E0982 - E184198 - 3.
Approx dimensions 5.0 cm x 4.0 cm x 1.0 cm
The sample consisted of a fragment of a fibre cement material.
Chrysotile asbestos, Amosite asbestos and Crocidolite asbestos detected.

Analysed and reported by,

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

NATA
NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: aset@bigpond.net.au WEBSITE: aset.com.au

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

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 14/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30608
Project:	E12723/4 AREA B
Our Reference Number :	5E0982
Date Received by Amdel :	14/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Asbestos	E8110	3	
Australian GST	GST		Amdel's turnaround times are typically 3-5 working days.

QCNOTE10

<u>Sample integrity upon receipt</u>

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	NA
*	VOC samples were received with Zero Headspace.	NA
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

AREA 6

No: 30608

Chain of Custody

Laboratory Quotation / Order No: IT/COFFEY Job No: E12723/1 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Amdel.	Sampled by: SNIDER DUERINCKX	Consigning Office: SYD Date Dispatched: 14/3/05
Attention: Julie Edmon	Project Manager: (report results to) STEVE NORTHWAY	Courier Service: Amdel Pickup Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	14.3.05	4pm		14/3/05	5.10.
			Emily	14/3	6.30.

| Comments | Sample Matrix | Container Type and Preservative | Sample No. | Date Sampled | Analyses Required: PAHs | TPHs | MAHs = BTEX | Metals | | |

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0984
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	19
Reference/Order	:	E12723/4/27323-4
Project	:	E12723/4 AREA D
Received Samples	:	14/03/05
Instructions	:	14/03/05
Date Reported	:	04/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0984

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	21/03/05	22/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	21/03/05	29/03/05	GTO	094
E1221	TPH (C10-C36)	21/03/05	22/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	21/03/05	29/03/05	GTO	094
E5910	Metals by ICP-AES	22/03/05	22/03/05	DLU	093
E5950	Mercury in Soil	22/03/05	22/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	21/03/05	22/03/05	MFA	095
E1290	Volatile Organic Compounds	19/03/05	19/03/05	GTO	094
E1090	Organophosphorus Pesticides	21/03/05	22/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184211	E184212	E184215	E184216	E184218
		CBH129	CBH129	CBH130	CBH130	CBH131
	Sample Id	0.0-0.2	0.5-0.95	0.05-0.2	1.0-1.5	0.4-0.6
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	2%	3%	3%	4%	2%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	10	nd	nd	nd
C15-C28 Fraction	50	nd	280	100	nd	nd
C29-C36 Fraction	50	nd	50	60	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	nd	nd	nd	nd
Toluene	1	--	nd	nd	nd	nd
Ethylbenzene	1	--	nd	nd	nd	nd
m&p-Xylene	2	--	nd	nd	nd	nd
o-Xylene	1	--	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	--	114%	94%	104%	96%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

	Lab No	E184219	E184221	E184223	E184224	E184226
		CBH131	CBH132	CBH132	CBH133	CBH133
Analyte	Sample Id	1.5-1.9	0.5-0.95	2.0-2.45	0.0-0.2	1.5-1.8
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	7%	8%	2%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	87%	98%	86%	102%	87%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No / Sample Id / PQL	E184227 DUP1D 14.3.05				
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	2%				
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	86%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27323-4

Project : E12723/4 AREA D

Analyte	Lab No	E184211	E184212	E184215	E184216	E184218
		CBH129	CBH129	CBH130	CBH130	CBH131
	Sample Id	0.0-0.2	0.5-0.95	0.05-0.2	1.0-1.5	0.4-0.6
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	6	nd	nd	nd	11
Copper	5	12	13	38	nd	14
Nickel	2	11	4	3	nd	nd
Lead	5	38	53	10	nd	79
Zinc	5	67	100	27	8	85
E5950 Mercury in Soil						
Mercury	0.05	0.10	0.14	0.12	0.13	0.23

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184219	E184221	E184223	E184224	E184226
		CBH131	CBH132	CBH132	CBH133	CBH133
	Sample Id	1.5-1.9	0.5-0.95	2.0-2.45	0.0-0.2	1.5-1.8
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	nd	nd	nd	27	7
Nickel	2	nd	3	nd	12	nd
Lead	5	nd	7	13	16	5
Zinc	5	21	13	49	25	9
E5950 Mercury in Soil						
Mercury	0.05	0.09	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No / Sample Id / PQL	E184227 DUP1D 14.3.05				
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	6				
Copper	5	32				
Nickel	2	15				
Lead	5	18				
Zinc	5	29				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27323-4

Project : E12723/4 AREA D

Analyte	Lab No	E184211	E184212	E184215	E184216	E184218
		CBH129	CBH129	CBH130	CBH130	CBH131
	Sample Id	0.0-0.2	0.5-0.95	0.05-0.2	1.0-1.5	0.4-0.6
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	0.6	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	2.4	nd	nd
Anthracene	0.5	nd	nd	0.6	nd	nd
Fluoranthene	0.5	1.4	nd	4.4	nd	0.6
Pyrene	0.5	1.6	nd	4.6	nd	0.6
Benz(a)anthracene	0.5	0.7	nd	2.0	nd	nd
Chrysene	0.5	0.7	nd	1.8	nd	nd
Benzo(b) & (k)fluoranthene	1	1	nd	3	nd	nd
Benzo(a)pyrene	0.5	0.8	nd	2.2	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	0.6	nd	1.8	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	0.6	nd	1.6	nd	nd
Total USEPA Priority PAHs	0.5	7.4	nd	26	nd	1.2
2-Fluorobiphenyl-SURROGATE	1	104%	97%	94%	94%	93%
Anthracene-d10-SURROGATE	1	103%	95%	97%	94%	96%
p-Terphenyl-D14-SURROGATE	1	104%	96%	96%	98%	96%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184219	E184221	E184223	E184224	E184226
		CBH131	CBH132	CBH132	CBH133	CBH133
	Sample Id	1.5-1.9	0.5-0.95	2.0-2.45	0.0-0.2	1.5-1.8
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	100%	97%	94%	94%	89%
Anthracene-d10-SURROGATE	1	101%	97%	96%	96%	92%
p-Terphenyl-D14-SURROGATE	1	99%	99%	100%	94%	92%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184227				
		DUP1D				
	Sample Id	14.3.05				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				
Total USEPA Priority PAHs	0.5	nd				
2-Fluorobiphenyl-SURROGATE	1	89%				
Anthracene-d10-SURROGATE	1	90%				
p-Terphenyl-D14-SURROGATE	1	89%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27323-4

Project : E12723/4 AREA D

Analyte	Lab No	E184215	E184216			
		CBH130	CBH130			
	Sample Id	0.05-0.2	1.0-1.5			
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd			
Mevinphos	0.5	nd	nd			
Ethoprop	0.5	nd	nd			
Phorate	0.5	nd	nd			
Demeton-s-methyl	0.5	nd	nd			
Diazinon	0.5	nd	nd			
Disulfoton	0.5	nd	nd			
Ronnel	0.5	nd	nd			
Chlorpyrifos methyl	0.5	nd	nd			
Chlorpyrifos	0.5	nd	nd			
Merphos	0.5	nd	nd			
Parathion methyl	0.5	nd	nd			
Fenthion	0.5	nd	nd			
Malathion	0.5	nd	nd			
Fenitrothion	0.5	nd	nd			
Prothiophos	0.5	nd	nd			
Stirophos	0.5	nd	nd			
Ethion	0.5	nd	nd			
Bolstar	0.5	nd	nd			
Fensulfothion	0.5	nd	nd			
Azinphos methyl	0.5	nd	nd			
Coumaphos	0.5	nd	nd			
2-Nitro-m-xylene-SURROGATE	1	89%	86%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27323-4

Project : E12723/4 AREA D

Analyte	Lab No	E184211				
		CBH129				
	Sample Id	0.0-0.2				
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184211				
		CBH129				
	Sample Id	0.0-0.2				
	PQL					
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184211				
		CBH129				
	Sample Id	0.0-0.2				
	PQL					
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	98%				
Toluene-D8-SURROGATE	1	100%				
4-Bromofluorobenzene-SURROGATE	1	98%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5579/ 8103 / 1 - 7
Your ref: 5E0984
NATA Accreditation No: 14484

23 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of seven samples, forwarded by Amdel Laboratories Ltd, on 22 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5579 / 8103 / 1. 5E0984 - CBH129 - E184211.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5579 / 8103 / 2. 5E0984 - CBH130 - E184215.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of clayish soil, stones, plant matter and fragments of plastic.
No asbestos detected.

Sample No. 3. ASET5579 / 8103 / 3. 5E0984 - CBH131 - E184218.
Approx dimensions 4.0 cm x 4.0 cm x 4.2 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

Sample No. 4. ASET5579 / 8103 / 4. 5E0984 - CBH132 - E184221.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of brick.
No asbestos detected.

Sample No. 5. ASET5579 / 8103 / 5. 5E0984 - CBH133 - E184224.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 6. ASET5579 / 8103 / 6. 5E0984 - CBH133 - E184226.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 7. ASET5579 / 8103 / 7. 5E0984 - DUP1D - E184227.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of cement.
No asbestos detected.

NATA Accredited Laboratory
Number: 14477

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0984

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

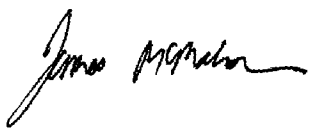
N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments



James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0984

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0984

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184211)							
C6-C9 Fraction	100	95		95%			
E1221 TPH in Soil (E184211)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		85%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E184215)							
Benzene	10	9.8		97%			
Toluene	10	10		99%			
Ethylbenzene	10	11		110%			
m&p-Xylene	20	21		103%			
o-Xylene	10	11		107%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	95			95%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	500			92%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.4			93%		
Toluene	10	11			105%		
Ethylbenzene	10	10			96%		
m&p-Xylene	20	18			91%		
o-Xylene	10	10			96%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184211,E184212)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E184211,E184212)								
C10-C14 Fraction	nd	nd			10	10	10	0%
C15-C28 Fraction	nd	nd			300	280	300	6%
C29-C36 Fraction	nd	nd			nd	50	50	
E1010 BTEX (P&T) in Soil (E184215,E184212)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E184211)							
Arsenic	50	47		93%			
Cadmium	50	46		93%			
Chromium	50	44		88%			
Copper	50	45		90%			
Nickel	50	47		94%			
Lead	50	36		71%			
Zinc	50	38		76%			
E5950 Mercury in Soil (E184211)							
Mercury	0.50	0.64		128%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	44			87%		
Cadmium	50	43			86%		
Chromium	50	42			83%		
Copper	50	45			91%		
Nickel	50	45			90%		
Lead	50	43			86%		
Zinc	50	43			86%		
E5950 Mercury in Soil							
Mercury	0.50	0.64			128%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E184211,E184212)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	6	6	6	0%	nd	nd		
Copper	16	12	14	28%	13	13	13	0%
Nickel	13	11	12	16%	4	4	4	0%
Lead	31	38	35	20%	53	53	53	0%
Zinc	69	67	68	2%	110	100	110	9%
E5950 Mercury in Soil (E184211,E184212)								
Mercury	0.12	0.10	0.11	18%	0.15	0.14	0.15	6%

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E184211)							
Naphthalene	5	5.0		101%			
Acenaphthylene	5	5.2		105%			
Acenaphthene	5	5.0		102%			
Fluorene	5	5.2		104%			
Phenanthrene	5	5.6		111%			
Anthracene	5	5.2		105%			
Fluoranthene	5	5.0		102%			
Pyrene	5	5.2		102%			
Benz(a)anthracene	5	5.2		102%			
Chrysene	5	4.8		95%			
Benzo(b) & (k)fluoranthene	10	10		101%			
Benzo(a)pyrene	5	5.2		104%			
Indeno(1.2.3-cd)pyrene	5	5.4		108%			
Dibenz(a.h)anthracene	5	5.2		103%			
Benzo(g.h.i)perylene	5	5.0		101%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.4			88%		
Acenaphthylene	5	4.4			89%		
Acenaphthene	5	4.4			89%		
Fluorene	5	4.4			89%		
Phenanthrene	5	4.4			89%		
Anthracene	5	4.6			91%		
Fluoranthene	5	4.4			90%		
Pyrene	5	4.8			94%		
Benz(a)anthracene	5	4.4			86%		
Chrysene	5	4.4			88%		
Benzo(b) & (k)fluoranthene	10	9			88%		
Benzo(a)pyrene	5	4.4			89%		
Indeno(1.2.3-cd)pyrene	5	4.4			87%		
Dibenz(a.h)anthracene	5	4.4			87%		
Benzo(g.h.i)perylene	5	4.4			89%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E184211,E184212)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	1.2	1.4	1.4	15%	nd	nd		
Pyrene	1.4	1.6	1.6	13%	nd	nd		
Benz(a)anthracene	0.7	0.7	0.7	0%	nd	nd		
Chrysene	0.7	0.7	0.7	0%	nd	nd		
Benzo(b) & (k)fluoranthene	1	1	1	0%	nd	nd		
Benzo(a)pyrene	0.8	0.8	0.8	0%	nd	nd		
Indeno(1.2.3-cd)pyrene	0.6	0.6	0.6	0%	nd	nd		
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	0.6	0.6	0.6	0%	nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	6.4			128%		
Mevinphos	5	6.2			122%		
Ethoprop	5	6.4			126%		
Phorate	5	6.6			130%		
Demeton-s-methyl	5	6.6			130%		
Diazinon	5	6.6			130%		
Disulfoton	5	6.6			130%		
Ronnel	5	6.2			122%		
Chlorpyrifos methyl	5	6.6			130%		
Chlorpyrifos	5	6.4			126%		
Parathion methyl	5	6.6			130%		
Fenthion	5	6.6			130%		
Malathion	5	6.6			130%		
Fenitrothion	5	6.2			124%		
Prothiophos	5	5.0			100%		
Stirophos	5	6.2			122%		
Ethion	5	6.0			120%		
Bolstar	5	5.8			116%		
Fensulfothion	5	5.2			104%		
Azinphos methyl	5	6.0			120%		
Coumaphos	5	5.2			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.6			96%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			101%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	9			94%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			92%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			91%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 14/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27323-4
Project:	E12723/4 AREA D
Our Reference Number :	5E0984
Date Received by Amdel :	14/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	11	
Volatile Organic Compounds	E1290	1	Amdel's turnaround times
Benzene,Toluene,Ethylbenzene & Xylene	E1010	10	are typically 3-5 working
TPH C6-C9 by Purge & Trap	E1230	11	days.
TPH (C10-C36)	E1221	11	
Metals by ICP-AES	E5910	11	
Mercury in Soil	E5950	11	
Polycyclic Aromatic Hydrocarbons	E1110	11	
Organophosphorus Pesticides	E1090	2	
Asbestos	E8112	7	
Samples on Hold (Soil)	E7600	6	
Samples on Hold (Water)	E7605	2	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

Area D

				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 metals	OCP	Asbestos	
	ALS DUPD4	11/03/2005	ALS							
	TS	11/03/2005			1					
	WB 11.3.05	11/03/2005		1			1			
	TB 11.3.05	11/03/2005			1					
E184211	CBH129 0.0-0.2	14/03/2005				1	1		1	
212	CBH129 0.9-0.95	14/03/2005	listed on COC as 0.5-0.95			1	1			
213	CBH129 1.5-1.7	14/03/2005								
214	CBH129 2.85-2.9	14/03/2005								
215	CBH130 0.05-0.2	14/03/2005		1			1	1	1	
216	CBH130 1.0-1.5	14/03/2005		1			1			
217	CBH131 0.1-0.3	14/03/2005								
218	CBH131 0.4-0.6	14/03/2005		1			1		1	
219	CBH131 1.5-1.9	14/03/2005		1			1			
220	CBH132 0.05-0.2	14/03/2005								
221	CBH132 0.5-0.95	14/03/2005		1			1		1	
222	CBH132 1.5-1.95	14/03/2005								
223	CBH132 2.0-2.45	14/03/2005		1			1			
224	CBH133 0.0-0.2	14/03/2005		1			1		1	
225	CBH133 0.5-0.7	14/03/2005								
226	CBH133 1.5-1.8	14/03/2005		1			1		1	
227	DUP1D	14/03/2005		1			1		1	
	DUP2D	14/03/2005	ALS							
228	TB 14.3.05	14/03/2005								
~~229~~	WB 14.3.05	14/03/2005	Move to Area C Batch							
			No. of Analyses	37		9	47	7	21	3

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

BT 17/3/05

AREA D

No: 27323

Chain of Custody

Laboratory Quotation / Order No:

Job No: E13723/4

Sheet 1 of 2

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Cetto, Chris Westacott	Consigning Office: SYD Date Dispatched: 14/3/05
Attention: John Eshman	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Cetto	14/3/05			14/3/05	5:40
Adam Cetto				14/3	6.32
			Liz Pitstock Amdel Cardiff 10.0°C	15/3/5	2pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals										Sample Condition on Receipt
E13421	Soil	Glass, Unpreserved	CBH 129 0.0-0.2	14/3/05														
12			a 0.85-0.95															
13			b 1.5-1.7				JAR only ⅓ full											
14			c 2.85-2.9				JAR only ⅓ full											
15			CBH 130 0.05-0.2															
16			b 1.0-1.3															
17			CBH 131 0.1-0.3				HOLD FOR INSTRUCTIONS											
18			0.4-0.6															
19			1.5-1.9															
20			CBH 132 0.05-0.2															
21			a 0.5-0.95															
22			b 1.5-1.95															
23			c 2.0-2.45															
24			CBH 133 0.0-0.2															
25			b 0.5-0.7															
26			c 1.5-1.8															
27			DUP 1 D															

14 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Carbon Copy

AREA D (CONT

No: 27324

Chain of Custody

Laboratory Quotation / Order No:

Job No:

Sheet 2 of 2

Dispatch to: (Address & Phone No.) ANGEL

Sampled by: Adam Gillis, Chris Westacott

Consigning Office: SA

Date Dispatched: 14/3/05

Attention: Julie Edwards

Project Manager: (report results to) ANNE NORTHWAY

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gillis	14/3/05	4pm	Liz Pitstock Andel Cardiff 10.0°C	15/3/05	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:										Sample Condition on Receipt
E18425	soil	Glass Unpreserved	DUP 2D (AUS)	14/3/05	SEND	TO	ALS	AND	HOLD		1xU							
E184228	water		TB 14/3/05 ✓		HOLD	FOR	1 WEEK		1xSOA	1xP	2xV	1xV						
↓ 29	water		WB 14/3/05 ✓															

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0984A
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	19
Reference/Order	:	E12723/4/27323-4
Project	:	E12723/4 AREA D
Received Samples	:	22/03/05
Instructions	:	14/03/05
Date Reported	:	24/03/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0984A

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	22/03/05	22/03/05	ZSI	096
E1290	Volatile Organic Compounds	22/03/05	23/03/05	GTO	094

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0984A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184212				
		CBH129				
	Sample Id	0.5-0.95				
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	3%				
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184212				
		CBH129				
	Sample Id	0.5-0.95				
	PQL					
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0984A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27323-4
Project : E12723/4 AREA D

Analyte	Lab No	E184212				
		CBH129				
	Sample Id	0.5-0.95				
	PQL					
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	91%				
Toluene-D8-SURROGATE	1	98%				
4-Bromofluorobenzene-SURROGATE	1	107%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0984A

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0984A

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0984A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			90%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			105%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	8			81%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			89%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			88%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0984A

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FROM: Client Services Cardiff

DATE: 22/03/05

AMENDED

FAX NO: (02) 9911 1001

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27323-4
Project:	E12723/4 AREA D
Our Reference Number :	5E0984A
Date Received by Amdel :	22/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	1	
Volatile Organic Compounds	E1290	1	Amdel's turnaround times are typically 3-5 working days.
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

Area D

				TPH/BTEX/PAH	BTEX	TPH/voc/PAH	8 metals	OCP	Asbestos	
	ALS DUPD4	11/03/2005	ALS							
	TS	11/03/2005			1					
	WB 11.3.05	11/03/2005		1			1			
	TB 11.3.05	11/03/2005			1					
E184211	CBH129 0.0-0.2	14/03/2005				1	1		1	
212	CBH129 0.9-0.95	14/03/2005	listed on COC as 0.5-0.95			1	1			
213	CBH129 1.5-1.7	14/03/2005								
214	CBH129 2.85-2.9	14/03/2005								
215	CBH130 0.05-0.2	14/03/2005		1			1	1	1	
216	CBH130 1.0-1.5	14/03/2005		1			1			
217	CBH131 0.1-0.3	14/03/2005								
218	CBH131 0.4-0.6	14/03/2005		1			1		1	
219	CBH131 1.5-1.9	14/03/2005		1			1			
220	CBH132 0.05-0.2	14/03/2005								
221	CBH132 0.5-0.95	14/03/2005		1			1		1	
222	CBH132 1.5-1.95	14/03/2005								
223	CBH132 2.0-2.45	14/03/2005		1			1			
224	CBH133 0.0-0.2	14/03/2005		1			1		1	
225	CBH133 0.5-0.7	14/03/2005								
226	CBH133 1.5-1.8	14/03/2005		1			1		1	
227	DUP1D	14/03/2005		1			1		1	
	DUP2D	14/03/2005	ALS							
228	TB 14.3.05	14/03/2005								
~~229~~	WB 14.3.05	14/03/2005	Move to Area C Batch							
			No. of Analyses	37		9	47	7	21	3

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

BT 17/3/05

AREA D

No: 27323

Chain of Custody

Laboratory Quotation / Order No:

Job No: E13723/4 Sheet 1 of 2

Dispatch to: (Address & Phone No.) AMDEL

Sampled by: Adam Cetto, Chris Westacott

Consigning Office: SYD

Date Dispatched: 14/3/05

Attention: John Eaman

Project Manager: (report results to) ANNE NORTHWAY

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Cetto	14/3/05	4pm		14/3/05	9am
Adam Cetto			Liz Pitstock Amdel Cardiff 10.0°C	15/3/05	2pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals:	Analyses Required	Sample Condition on Receipt
E13421	Soil	Glass, Unpreserved	CBH 129 0.0-0.1	14/3/05						
12			a 0.85-0.95							
13			b 1.5-1.7				JAR only ⅓ full			
14			" 2.85-2.9				JAR only ⅓ full			
15			CBH 130 0.05-0.2							
16			" 1.0-1.9							
17			CBH 131 0.1-0.3				HOLD FOR INSTRUCTIONS			
18			0.4-0.6							
19			1.5-1.9							
20			CBH 132 0.05-0.2							
21			" 0.5-0.95							
22			" 1.5-1.95							
23			" 2.0-2.45							
24			CBH 133 0.0-0.2							
25			" 0.5-0.7							
26			" 1.5-1.8							
27			DUP 1							

14 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Custody

AREA D (CONT

No: 27324

Chain of Custody

Laboratory Quotation / Order No:

Job No:

Sheet 2 of 2

Dispatch to: (Address & Phone No.) ANWEL

Sampled by: Adam Gillis, Chris Westacott

Consigning Office: SAD

Date Dispatched: 14/3/05

Attention: Julie Edwards

Project Manager: (report results to) ANNE NORTHWAY

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gillis	14/3/05	4pm	Liz Pitstock Andel Cardiff 10.0°C	14/3	16:15
Adam Gillis				14/3	5.30
				15/3/5	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals:										Sample Condition on Receipt
E18425	soil	Glass Unpreserved	DUP 2D (ALS)	14/3/05	SEND TO ALS AND HOLD 1xU													
E184228	water		TB 14/3/05 ✓		HOLD for Instructions 1x500mL Type E 2xV 1xM													
↓ 29	water		WB 14/3/05 ✓															

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

COFFEY

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0998
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	23
Reference/Order	:	E12726/4/30609-10
Project	:	E12723/4 AREA D
Received Samples	:	16/03/05
Instructions	:	24/03/05
Date Reported	:	13/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0998

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	30/03/05	31/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	30/03/05	13/04/05	GTO	094
E1221	TPH (C10-C36)	30/03/05	31/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	30/03/05	13/04/05	GTO	094
E5910	Metals by ICP-AES	01/04/05	01/04/05	DLU	093
E5950	Mercury in Soil	04/04/05	04/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	30/03/05	02/04/05	MFA	095
E1290	Volatile Organic Compounds	30/03/05	30/03/05	GTO	094
E1080	Organochlorine Pesticides	30/03/05	30/03/05	MFA	095
E1120	Polychlorinated Biphenyls in Soil, mg/kg	30/03/05	30/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184408	E184410	E184411	E184412	E184413
		CBH128	CBH128	CBH136	CBH136	CBH137
	Sample Id	0.0-0.2	2.2-2.65	0.0-0.2	1.0-1.4	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	2%	7%	3%	21%	2%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	10	nd	nd	nd	nd
C15-C28 Fraction	50	300	nd	nd	nd	nd
C29-C36 Fraction	50	140	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	84%	98%	93%	60%	85%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184414	E184416	E184417	E184418	E184420
		CBH137	CBH135	CBH135	CBH135	CBH134
	Sample Id	1.0-1.4	0.5-0.7	1.5-1.95	3.5-3.7	1.0-1.4
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	22%	5%	7%	20%	4%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	70	180	nd	50
C29-C36 Fraction	50	nd	nd	120	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	90%	84%	91%	91%	96%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184422	E184423	E184425	E184426	E184427
		CBH134	DUPD5	CBH138	CBH138	CBH139
	Sample Id	3.2-3.5	15.3.05	1.2-1.7	2.0-2.2	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	9%	2%	14%	21%	6%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	80	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	87%	89%	90%	92%	93%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	14%				
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--				
Toluene	1	--				
Ethylbenzene	1	--				
m&p-Xylene	2	--				
o-Xylene	1	--				
4-Bromofluorobenzene-SURROGATE	1	--				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/30609-10

Project : E12723/4 AREA D

Analyte	Lab No	E184408	E184410	E184411	E184412	E184413
		CBH128	CBH128	CBH136	CBH136	CBH137
	Sample Id	0.0-0.2	2.2-2.65	0.0-0.2	1.0-1.4	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	42	nd	nd	nd	8
Nickel	2	3	nd	nd	nd	4
Lead	5	120	nd	nd	nd	18
Zinc	5	33	nd	6	nd	19
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	--	--	nd	--	--
Aroclor 1221	1	--	--	nd	--	--
Aroclor 1232 & 1242 as total	1	--	--	nd	--	--
Aroclor 1248 & 1254 as total	1	--	--	nd	--	--
Aroclor 1260 & 1262 as total	1	--	--	nd	--	--
Total Polychlorinated biphenyl	1	--	--	nd	--	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184414	E184416	E184417	E184418	E184420
		CBH137	CBH135	CBH135	CBH135	CBH134
	Sample Id	1.0-1.4	0.5-0.7	1.5-1.95	3.5-3.7	1.0-1.4
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	6	nd	5
Copper	5	nd	19	15	nd	28
Nickel	2	nd	4	7	nd	3
Lead	5	nd	140	80	nd	82
Zinc	5	nd	220	120	nd	180
E5950 Mercury in Soil						
Mercury	0.05	nd	0.07	nd	nd	0.10
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	--	--	--	--	--
Aroclor 1221	1	--	--	--	--	--
Aroclor 1232 & 1242 as total	1	--	--	--	--	--
Aroclor 1248 & 1254 as total	1	--	--	--	--	--
Aroclor 1260 & 1262 as total	1	--	--	--	--	--
Total Polychlorinated biphenyl	1	--	--	--	--	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184422	E184423	E184425	E184426	E184427
		CBH134	DUPD5	CBH138	CBH138	CBH139
	Sample Id	3.2-3.5	15.3.05	1.2-1.7	2.0-2.2	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	1.8
Chromium	5	nd	nd	nd	nd	15
Copper	5	8	8	nd	nd	190
Nickel	2	nd	3	nd	nd	6
Lead	5	47	19	5	nd	420
Zinc	5	95	19	6	nd	530
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	0.08
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	--	--	--	--	nd
Aroclor 1221	1	--	--	--	--	nd
Aroclor 1232 & 1242 as total	1	--	--	--	--	nd
Aroclor 1248 & 1254 as total	1	--	--	--	--	nd
Aroclor 1260 & 1262 as total	1	--	--	--	--	nd
Total Polychlorinated biphenyl	1	--	--	--	--	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	6				
E5950 Mercury in Soil						
Mercury	0.05	nd				
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	--				
Aroclor 1221	1	--				
Aroclor 1232 & 1242 as total	1	--				
Aroclor 1248 & 1254 as total	1	--				
Aroclor 1260 & 1262 as total	1	--				
Total Polychlorinated biphenyl	1	--				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/30609-10

Project : E12723/4 AREA D

Analyte	Lab No	E184408	E184410	E184411	E184412	E184413
		CBH128	CBH128	CBH136	CBH136	CBH137
	Sample Id	0.0-0.2	2.2-2.65	0.0-0.2	1.0-1.4	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	1.2	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	6.2	nd	nd	nd	nd
Anthracene	0.5	2.0	nd	nd	nd	nd
Fluoranthene	0.5	10	nd	nd	nd	0.8
Pyrene	0.5	10	nd	nd	nd	0.9
Benz(a)anthracene	0.5	5.4	nd	nd	nd	0.7
Chrysene	0.5	4.4	nd	nd	nd	0.6
Benzo(b) & (k)fluoranthene	1	7	nd	nd	nd	1
Benzo(a)pyrene	0.5	4.6	nd	nd	nd	0.7
Indeno(1.2.3-cd)pyrene	0.5	3.4	nd	nd	nd	0.6
Dibenz(a.h)anthracene	0.5	0.6	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	2.6	nd	nd	nd	0.6
Total USEPA Priority PAHs	0.5	58	nd	nd	nd	6.2
2-Fluorobiphenyl-SURROGATE	1	79%	96%	91%	96%	94%
Anthracene-d10-SURROGATE	1	72%	88%	86%	92%	89%
p-Terphenyl-D14-SURROGATE	1	77%	88%	86%	93%	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184414	E184416	E184417	E184418	E184420
		CBH137	CBH135	CBH135	CBH135	CBH134
	Sample Id	1.0-1.4	0.5-0.7	1.5-1.95	3.5-3.7	1.0-1.4
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	2.0	2.2	nd	nd
Anthracene	0.5	nd	0.6	0.8	nd	nd
Fluoranthene	0.5	nd	3.0	3.8	nd	0.9
Pyrene	0.5	nd	3.0	3.8	nd	1.0
Benz(a)anthracene	0.5	nd	1.6	1.6	nd	0.5
Chrysene	0.5	nd	1.4	1.4	nd	0.5
Benzo(b) & (k)fluoranthene	1	nd	2	3	nd	1
Benzo(a)pyrene	0.5	nd	1.4	1.8	nd	0.6
Indeno(1.2.3-cd)pyrene	0.5	nd	1.2	1.4	nd	0.6
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	1.0	1.0	nd	nd
Total USEPA Priority PAHs	0.5	nd	17	21	nd	5.2
2-Fluorobiphenyl-SURROGATE	1	89%	98%	89%	89%	94%
Anthracene-d10-SURROGATE	1	86%	90%	82%	85%	89%
p-Terphenyl-D14-SURROGATE	1	84%	92%	85%	84%	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184422	E184423	E184425	E184426	E184427
		CBH134	DUPD5	CBH138	CBH138	CBH139
	Sample Id	3.2-3.5	15.3.05	1.2-1.7	2.0-2.2	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.5	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.8	1.0	nd	nd	nd
Pyrene	0.5	0.9	1.0	nd	nd	nd
Benz(a)anthracene	0.5	nd	0.7	nd	nd	nd
Chrysene	0.5	nd	0.7	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	1	nd	nd	nd
Benzo(a)pyrene	0.5	nd	0.9	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	0.8	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	0.6	nd	nd	nd
Total USEPA Priority PAHs	0.5	2.2	7.0	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	89%	93%	90%	92%	95%
Anthracene-d10-SURROGATE	1	85%	87%	86%	89%	89%
p-Terphenyl-D14-SURROGATE	1	86%	90%	87%	89%	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				
Total USEPA Priority PAHs	0.5	nd				
2-Fluorobiphenyl-SURROGATE	1	89%				
Anthracene-d10-SURROGATE	1	87%				
p-Terphenyl-D14-SURROGATE	1	86%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/30609-10

Project : E12723/4 AREA D

Analyte	Lab No	E184411	E184427			
		CBH136	CBH139			
	Sample Id	0.0-0.2	0.0-0.2			
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd			
a-BHC	0.1	nd	nd			
g-BHC	0.1	nd	nd			
Heptachlor	0.1	nd	nd			
Aldrin	0.1	nd	nd			
b-BHC	0.1	nd	nd			
d-BHC	0.1	nd	nd			
Oxychlordane	0.1	nd	nd			
Heptachlor epoxide	0.1	nd	nd			
Endosulfan 1	0.1	nd	nd			
Chlordane-Trans	0.1	nd	nd			
Chlordane-Cis	0.1	nd	nd			
trans-Nonachlor	0.1	nd	nd			
DDE	0.1	nd	nd			
Dieldrin	0.1	nd	nd			
Endrin	0.1	nd	nd			
DDD	0.1	nd	nd			
Endosulfan 2	0.1	nd	nd			
DDT	0.1	nd	nd			
Endosulfan sulfate	0.1	nd	nd			
Methoxychlor	0.1	nd	nd			
2.4.5.6-TCMX-SURROGATE	1	84%	101%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/30609-10

Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0998
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/30609-10
Project : E12723/4 AREA D

Analyte	Lab No	E184429				
		CBH139				
	Sample Id	2.0-2.5				
	PQL					
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
Pentafluorobenzene-SURROGATE	1	100%				
Toluene-D8-SURROGATE	1	100%				
4-Bromofluorobenzene-SURROGATE	1	100%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5627/ 8174 / 1 - 8
Your ref: 5E0998
NATA Accreditation No: 14484

4 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff,
NSW 2285.

Attn: Ms. Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of eight samples, forwarded by Amdel Laboratories Ltd, on 31 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5627 / 8174 / 1. E184408 / CBH128 0.0-0.2
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5627 / 8174 / 2. E184411 / CBH136 0.0-0.2
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

Sample No. 3. ASET5627 / 8174 / 3. E184413 / CBH137 0.0-0.2
Approx dimensions 4.5 cm x 4.5 cm x 0.1 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 4. ASET5627 / 8174 / 4. E184417 / CBH135 1.5-1.95
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 5. ASET5627 / 8174 / 5. E184420 / CBH134 1.0-1.4
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 6. ASET5627 / 8174 / 6. E184423 / DUP DS
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

Sample No. 7. ASET5627 / 8174 / 7. E184425 / CBH138 1.2-1.7
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 8. ASET5627 / 8174 / 8. E184428 / CBH139 1.7-1.9
Approx dimensions 4.5 cm x 4.5 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

NATA Accredited Laboratory Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Michaela Foley B EnvSc
Environmental Scientist / Approved Analyst

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

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref : ASET5794/ 8379 / 1 - 1
Your ref :5E0998
NATA Accreditation No: 14484

25 April 2005

Amdel Laboratories Ltd,
99, Mitchell rd,
Cardiff,
NSW 2285.

Attn:Ms. Julie Edman
Fax No:02 - 4902 4899

Dear Julie,
Asbestos Identification
This report presents the results of one sample, forwarded by Amdel Laboratories Ltd, on 21 April 2005, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy inconjunction with dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET5794 / 8379 / 1. 5E0998 - E184427 - CBH 139 - 0.0 - 0.2.**
Approx dimensions 3.5 cm x 3.5 cm x 4.25 cm
The sample consisted of mixture of sandy soil, stones and fragments of plaster, cement, bitumin and brick.
No asbestos detected.

Analysed and reported by,

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

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0998

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX Soils Done under
NATA Accreditation Number:14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0998

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0998

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184408,E184428)							
C6-C9 Fraction	100	97		97%			
E1221 TPH in Soil (E184410,E184428)							
C10-C14 Fraction							
C15-C28 Fraction	550	620		112%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E184408,E184428)							
Benzene	10	11		106%			
Toluene	10	10		96%			
Ethylbenzene	10	9		90%			
m&p-Xylene	20	18		90%			
o-Xylene	10	10		98%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	80			80%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			95%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	11			114%		
Toluene	10	10			100%		
Ethylbenzene	10	10			97%		
m&p-Xylene	20	19			96%		
o-Xylene	10	10			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184408,E184411)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E184410,E184412)								
C10-C14 Fraction	nd	nd			nd	nd		
C15-C28 Fraction	nd	nd			nd	nd		
C29-C36 Fraction	nd	nd			nd	nd		
E1010 BTEX (P&T) in Soil (E184408,E184411)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E184408,E184428)							
Arsenic	50	48		97%			
Cadmium	50	45		90%			
Chromium	50	49		98%			
Copper	50	57		114%			
Nickel	50	49		99%			
Lead	50						
Zinc	50	49		98%			
E5950 Mercury in Soil (E184412,E184428)							
Mercury	0.50	0.51		101%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	48	46		96%	92%	
Cadmium	50	46	46		92%	93%	
Chromium	50	46	48		93%	97%	
Copper	50	48	50		97%	101%	
Nickel	50	50	50		101%	100%	
Lead	50	47	48		94%	96%	
Zinc	50	50	47		100%	94%	
E5950 Mercury in Soil							
Mercury	0.50	0.40			81%		
E1120 Polychlorinated Biphenyls in Soil							
Aroclor 1016	-	--					
Aroclor 1221	-	--					
Aroclor 1232 & 1242 as total	-	--					
Aroclor 1248 & 1254 as total	-	--					
Aroclor 1260 & 1262 as total	10.00	12			120%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E184408,E184413)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	nd	nd			nd	nd		
Copper	44	42	43	4%	8	8	8	0%
Nickel	3	3	3	0%	4	4	4	0%
Lead	130	120	130	7%	18	18	18	0%
Zinc	35	33	34	5%	18	19	19	5%
E5950 Mercury in Soil (E184412,E184414)								
Mercury	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd				
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E184410,E184428)							
Naphthalene	5	4.0		81%			
Acenaphthylene	5	4.6		92%			
Acenaphthene	5	4.0		81%			
Fluorene	5	4.0		79%			
Phenanthrene	5	4.2		82%			
Anthracene	5	4.0		80%			
Fluoranthene	5	4.2		83%			
Pyrene	5	4.0		81%			
Benz(a)anthracene	5	4.0		81%			
Chrysene	5	4.0		79%			
Benzo(b) & (k)fluoranthene	10	8		83%			
Benzo(a)pyrene	5	4.6		91%			
Indeno(1.2.3-cd)pyrene	5	4.4		89%			
Dibenz(a.h)anthracene	5	4.4		88%			
Benzo(g.h.i)perylene	5	4.4		87%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			81%		
Acenaphthylene	5	4.6			91%		
Acenaphthene	5	4.0			81%		
Fluorene	5	4.0			81%		
Phenanthrene	5	4.2			83%		
Anthracene	5	4.2			82%		
Fluoranthene	5	4.2			83%		
Pyrene	5	4.0			81%		
Benz(a)anthracene	5	3.8			74%		
Chrysene	5	4.2			82%		
Benzo(b) & (k)fluoranthene	10	8			79%		
Benzo(a)pyrene	5	3.8			77%		
Indeno(1.2.3-cd)pyrene	5	3.8			76%		
Dibenz(a.h)anthracene	5	3.8			78%		
Benzo(g.h.i)perylene	5	4.2			85%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E184410,E184412)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	nd	nd			nd	nd		
Pyrene	nd	nd			nd	nd		
Benz(a)anthracene	nd	nd			nd	nd		
Chrysene	nd	nd			nd	nd		
Benzo(b) & (k)fluoranthene	nd	nd			nd	nd		
Benzo(a)pyrene	nd	nd			nd	nd		
Indeno(1.2.3-cd)pyrene	nd	nd			nd	nd		
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			102%		
a-BHC	0.5	0.5			102%		
g-BHC	0.5	0.5			100%		
Heptachlor	0.5	0.5			102%		
Aldrin	0.5	0.5			102%		
b-BHC	0.5	0.5			100%		
d-BHC	0.5	0.5			102%		
Oxychlordane	0.5	0.5			102%		
Heptachlor epoxide	0.5	0.5			102%		
Endosulfan 1	0.5	0.5			102%		
Chlordane-Trans	0.5	0.5			102%		
Chlordane-Cis	0.5	0.5			102%		
trans-Nonachlor	0.5	0.5			102%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			102%		
Endrin	0.5	0.5			108%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			100%		
DDT	1	1.0			100%		
Endosulfan sulfate	0.5	0.5			102%		
Methoxychlor	0.5	0.5			102%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			89%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	9			93%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	8			82%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			90%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0998

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			87%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 16/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12726/4/30609-10
Project:	E12723/4 AREA D
Our Reference Number :	5E0998
Date Received by Amdel :	16/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	16	
Volatile Organic Compounds	E1290	1	Amdel's turnaround times
Benzene,Toluene,Ethylbenzene & Xylene	E1010	15	are typically 3-5 working
TPH C6-C9 by Purge & Trap	E1230	16	days.
TPH (C10-C36)	E1221	16	
Metals by ICP-AES	E5910	16	
Mercury in Soil	E5950	16	
Polycyclic Aromatic Hydrocarbons	E1110	16	
Organochlorine Pesticides	E1080	2	
Polychlorinated Biphenyls in Soil, mg/k	E1120	2	
Asbestos	E8110	8	
Samples on Hold (Soil)	E7600	6	
Samples on Hold (Water)	E7605	1	

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

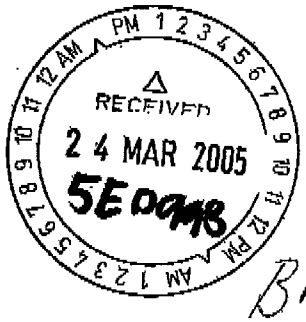
UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Area	Sample ID	Date Collected	COMMENTS	Analysis							
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
E184408 Area D	CBH128 0.0-0.2	15/03/2005		1				1		1	
E184409	CBH128 1.0-1.45	15/03/2005	INCOMPLETE SAMPLE								
410	CBH128 2.2-2.65	15/03/2005		1				1			
419	CBH134 0.0-0.2	15/03/2005									
420	CBH134 1.0-1.4	15/03/2005		1				1		1	
421	CBH134 2.1-2.55	15/03/2005									
422	CBH134 3.2-3.5	15/03/2005		1				1			
415	CBH135 0.0-0.2	15/03/2005									
416	CBH135 0.5-0.7	15/03/2005		1				1			
417	CBH135 1.5-1.95	15/03/2005		1				1		1	
418	CBH135 3.5-3.7	15/03/2005		1				1			
411	CBH136 0.0-0.2	15/03/2005		1				1	1	1	
412	CBH136 1.0-1.4	15/03/2005		1				1			
413	CBH137 0.0-0.2	15/03/2005		1				1		1	
414	CBH137 1.0-1.4	15/03/2005		1				1			
424	CBH138 0.0-0.2	15/03/2005									
425	CBH138 1.2-1.7	15/03/2005		1				1		1	
426	CBH138 2.0-2.2	15/03/2005		1				1			
427	CBH139 0.0-0.2	15/03/2005		1				1	1	1	
428	CBH139 1.7-1.9	15/03/2005									
429	CBH139 2.0-2.5	15/03/2005					1	1			
423	DUPD5	15/03/2005		1				1		1	
	ALSD5	15/03/2005		1				1		1	
430	TS050310.11	15/03/2005									
	CBH100 0.0-0.2	16/03/2005									
	CBH100 1.0-1.4	16/03/2005		1				1		1	
	CBH100 1.5-1.95	16/03/2005		1				1			
	CBH100 3.0-3.45	16/03/2005									1
	CBH98 0.0-0.2	16/03/2005		1				1		1	
	CBH98 1.1-1.5	16/03/2005									
	CBH98 2.0-2.4	16/03/2005									
	CBH98 2.8-2.35	16/03/2005	CHANGE NAME TO CBH98 2.8-3.35	1				1			
	CBH99 0.0-0.2	16/03/2005					1	1			
	CBH99 1.2-1.75	16/03/2005	CHANGE NAME TO CBH99 1.4-1.75				1	1		1	
	CBH99 2.5-2.8	16/03/2005									
	CBH99 4.55-4.7	16/03/2005					1	1			

RECEIVED 24 MAR 2005 5E0098

PCB

	CBH117 0.5-0.95	11/03/2005	
	CBH117 1.5-1.95	11/03/2005	1
	CBH117 2.5-2.95	11/03/2005	
	CBH118 0.0-0.2	11/03/2005	
	CBH118 0.5-0.8	11/03/2005	
	CBH118 1.5-1.95	11/03/2005	
	CBH118 2.5-2.95	11/03/2005	
	DUPD3	11/03/2005	
	ALS D3	11/03/2005	
	DUPD4	11/03/2005	
	ALS DUPD4	11/03/2005	
	TS	11/03/2005	
	WB 11.3.05	11/03/2005	
	TB 11.3.05	11/03/2005	
	CBH129 0.0-0.2	14/03/2005	
	CBH129 0.9-0.95	14/03/2005	
	CBH129 1.5-1.7	14/03/2005	
	CBH129 2.85-2.9	14/03/2005	
	CBH130 0.05-0.2	14/03/2005	1
	CBH130 1.0-1.5	14/03/2005	
	CBH131 0.1-0.3	14/03/2005	
	CBH131 0.4-0.6	14/03/2005	
	CBH131 1.5-1.9	14/03/2005	
	CBH132 0.05-0.2	14/03/2005	1
	CBH132 0.5-0.95	14/03/2005	
	CBH132 1.5-1.95	14/03/2005	
	CBH132 2.0-2.45	14/03/2005	
	CBH133 0.0-0.2	14/03/2005	
	CBH133 0.5-0.7	14/03/2005	
	CBH133 1.5-1.8	14/03/2005	
	DUP1D	14/03/2005	
	DUP2D	14/03/2005	
	TB 14.3.05	14/03/2005	
	WB 14.3.05	14/03/2005	
	CBH128 0.0-0.2	15/03/2005	
	CBH128 1.0-1.45	15/03/2005	
	CBH128 2.2-2.65	15/03/2005	
	CBH134 0.0-0.2	15/03/2005	
	CBH134 1.0-1.4	15/03/2005	
	CBH134 2.1-2.55	15/03/2005	
	CBH134 3.2-3.5	15/03/2005	
	CBH135 0.0-0.2	15/03/2005	
	CBH135 0.5-0.7	15/03/2005	
	CBH135 1.5-1.95	15/03/2005	
	CBH135 3.5-3.7	15/03/2005	
EB0411	CBH136 0.0-0.2	15/03/2005	1
	CBH136 1.0-1.4	15/03/2005	
	CBH137 0.0-0.2	15/03/2005	
	CBH137 1.0-1.4	15/03/2005	
	CBH138 0.0-0.2	15/03/2005	
	CBH138 1.2-1.7	15/03/2005	
	CBH138 2.0-2.2	15/03/2005	
427	CBH139 0.0-0.2	15/03/2005	1
	CBH139 1.7-1.9	15/03/2005	
	CBH139 2.0-2.5	15/03/2005	
	DUPD5	15/03/2005	
	ALSD5	15/03/2005	
	TS050310.11	15/03/2005	
	CBH100 0.0-0.2	16/03/2005	
	CBH100 1.0-1.4	16/03/2005	



BR
24/3

No: 30609

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CHRIS WESTACOTT	Consigning Office:
		Date Dispatched:
Attention: JULIE EDMON	Project Manager: (report results to) ANNE HATHWAY NORTHWAY	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
CHRIS WESTACOTT	15/3/05	4pm	Bruce Lee Pitstock	15/3	6.30
				16/3	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
E18408	SOIL	Jar + Ice	CBH178 0.5-0.7	15/3/05					
			" 1.0-1.45						
			2.7-2.85						
			CBH176 0.0-0.7						
			" 1.0-1.2						
			CBH137 0.0-0.7						
			" 1.0-1.4						
			CBH135 0.0-0.7						
			" 0.5-0.7						
			" 1.5-1.95						
			2.5-2.7						
			CBH134 0.0-0.1						
			" 1.0-1.4						
			" 2.4-2.64						
			" 3.2-3.5						
			ALS DS		→ FWD TO ALS for Analysis				
			DUP DS						

FOR LABORATORY USE ONLY

15 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

AREAD

No: 30610

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 2 of 2

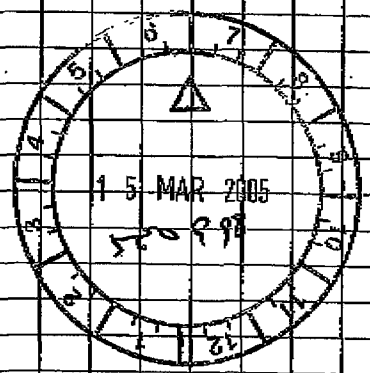
Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CHRIS WESTACOTT	Consigning Office: SYD Date Dispatched: 15/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE HATHAWAY NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
CHRIS WESTACOTT	15/3/05	4pm	Liz Pitstock	15/3	6.30
				16/3	20m

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
	SOIL	JAR + ICE	CBH134 0.0-0.2	15/3/05					
			" 0.7-1.7						
			" 2.0-2.2						
			CBH139 0.0-0.2						
			" 1.7-1.9						
			" 2.0-2.5						
			TS050310.11	10/3/05					

FIELD FILTRATION



Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0999
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	20
Reference/Order	:	E12726/4/27325-6
Project	:	E12723/4 AREA B
Received Samples	:	16/03/05
Instructions	:	15/03/05
Date Reported	:	13/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E0999

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	24/03/05	24/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	24/03/05	08/04/05	JMC	094
E1221	TPH (C10-C36)	24/03/05	25/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	24/03/05	08/04/05	JMC	094
E5910	Metals by ICP-AES	31/03/05	31/03/05	DLU	093
E5950	Mercury in Soil	31/03/05	31/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	24/03/05	29/03/05	MFA	095
E1290	Volatile Organic Compounds	24/03/05	24/03/05	GTO	094
E1080	Organochlorine Pesticides	24/02/05	30/03/05	MFA	095
E1090	Organophosphorus Pesticides	24/03/05	30/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

	Lab No	E184433	E184434	E184435	E184436	E184437
		CBH72MW6	CBH72MW6	CBH73MW8	CBH74MW9	CBH74MW9
Analyte	Sample Id	0.2-0.3	0.5-0.7	0.1-0.3	0.15-.25	0.5-0.7
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%	9%	8%	2%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--	nd	nd	--
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--	nd	nd	--
C15-C28 Fraction	50	nd	--	nd	nd	--
C29-C36 Fraction	50	nd	--	nd	nd	--
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	nd	nd	--
Toluene	1	nd	--	nd	nd	--
Ethylbenzene	1	nd	--	nd	nd	--
m&p-Xylene	2	nd	--	nd	nd	--
o-Xylene	1	nd	--	nd	nd	--
4-Bromofluorobenzene-SURROGATE	1	110%	--	102%	97%	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184438	E184439	E184440	E184441	E184442
		HA22	HA22	HA23	HA24	HA24
	Sample Id	0.15-0.2	0.5-0.6	0.15-0.2	0.15-.25	0.6-0.7
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%	5%	5%	7%	5%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	60
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	nd	--	--	nd
Toluene	1	--	nd	--	--	nd
Ethylbenzene	1	--	nd	--	--	nd
m&p-Xylene	2	--	nd	--	--	nd
o-Xylene	1	--	nd	--	--	nd
4-Bromofluorobenzene-SURROGATE	1	--	111%	--	--	117%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184443	E184445	E184446		
		HA25	HA26	HA26		
	Sample Id	0.0-0.1	0.0-0.1	0.4-0.5		
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	24%	9%		
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	--		
E1221 TPH in Soil						
C10-C14 Fraction	10	20	nd	--		
C15-C28 Fraction	50	320	nd	--		
C29-C36 Fraction	50	200	nd	--		
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	--		
Toluene	1	nd	nd	--		
Ethylbenzene	1	nd	nd	--		
m&p-Xylene	2	nd	nd	--		
o-Xylene	1	nd	nd	--		
4-Bromofluorobenzene-SURROGATE	1	112%	107%	--		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/27325-6

Project : E12723/4 AREA B

	Lab No	E184433	E184434	E184435	E184436	E184437
		CBH72MW6	CBH72MW6	CBH73MW8	CBH74MW9	CBH74MW9
Analyte	Sample Id	0.2-0.3	0.5-0.7	0.1-0.3	0.15-.25	0.5-0.7
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	54	11	37	nd	nd
Copper	5	22	5	20	nd	6
Nickel	2	57	12	45	nd	nd
Lead	5	13	nd	6	nd	27
Zinc	5	50	21	31	nd	45
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	0.05	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184438	E184439	E184440	E184441	E184442
		HA22	HA22	HA23	HA24	HA24
	Sample Id	0.15-0.2	0.5-0.6	0.15-0.2	0.15-.25	0.6-0.7
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	1.2	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	8	nd	19	6	7
Nickel	2	3	nd	nd	nd	nd
Lead	5	21	9	nd	7	170
Zinc	5	39	19	9	19	89
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184443	E184445	E184446		
		HA25	HA26	HA26		
	Sample Id	0.0-0.1	0.0-0.1	0.4-0.5		
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd		
Cadmium	0.5	nd	nd	nd		
Chromium	5	nd	nd	nd		
Copper	5	120	nd	nd		
Nickel	2	6	nd	nd		
Lead	5	170	6	nd		
Zinc	5	65	6	nd		
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/27325-6

Project : E12723/4 AREA B

Analyte	Lab No	E184433	E184435	E184436	E184438	E184439
		CBH72MW6	CBH73MW8	CBH74MW9	HA22	HA22
	Sample Id	0.2-0.3	0.1-0.3	0.15-.25	0.15-0.2	0.5-0.6
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	89%	88%	92%	94%	94%
Anthracene-d10-SURROGATE	1	89%	90%	93%	91%	94%
p-Terphenyl-D14-SURROGATE	1	91%	93%	93%	95%	96%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184440	E184441	E184442	E184443	E184445
		HA23	HA24	HA24	HA25	HA26
	Sample Id	0.15-0.2	0.15-.25	0.6-0.7	0.0-0.1	0.0-0.1
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	0.6	nd
Phenanthrene	0.5	nd	nd	2.2	6.6	0.6
Anthracene	0.5	nd	nd	nd	2.0	nd
Fluoranthene	0.5	nd	nd	3.2	7.8	nd
Pyrene	0.5	nd	nd	3.4	8.4	nd
Benz(a)anthracene	0.5	nd	nd	1.4	4.6	nd
Chrysene	0.5	nd	nd	1.4	3.6	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	2	6	nd
Benzo(a)pyrene	0.5	nd	nd	1.2	3.8	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	0.9	2.0	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	0.8	1.6	nd
Total USEPA Priority PAHs	0.5	nd	nd	17	47	0.6
2-Fluorobiphenyl-SURROGATE	1	84%	91%	94%	90%	87%
Anthracene-d10-SURROGATE	1	86%	94%	95%	84%	82%
p-Terphenyl-D14-SURROGATE	1	87%	96%	97%	88%	87%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/27325-6

Project : E12723/4 AREA B

Analyte	Lab No	E184438	E184440	E184441		
		HA22	HA23	HA24		
	Sample Id	0.15-0.2	0.15-0.2	0.15-.25		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184438	E184440	E184441		
		HA22	HA23	HA24		
	Sample Id	0.15-0.2	0.15-0.2	0.15-.25		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999
Client : Coffey Geosciences Pty Ltd
Reference : E12726/4/27325-6
Project : E12723/4 AREA B

Analyte	Lab No	E184438	E184440	E184441		
		HA22	HA23	HA24		
	Sample Id	0.15-0.2	0.15-0.2	0.15-.25		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Trichlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	84%	94%	94%		
Toluene-D8-SURROGATE	1	100%	100%	100%		
4-Bromofluorobenzene-SURROGATE	1	97%	98%	98%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/27325-6

Project : E12723/4 AREA B

Analyte	Lab No	E184443	E184445			
		HA25	HA26			
	Sample Id	0.0-0.1	0.0-0.1			
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd			
a-BHC	0.1	nd	nd			
g-BHC	0.1	nd	nd			
Heptachlor	0.1	nd	nd			
Aldrin	0.1	nd	nd			
b-BHC	0.1	nd	nd			
d-BHC	0.1	nd	nd			
Oxychlordane	0.1	nd	nd			
Heptachlor epoxide	0.1	nd	nd			
Endosulfan 1	0.1	nd	nd			
Chlordane-Trans	0.1	nd	nd			
Chlordane-Cis	0.1	nd	nd			
trans-Nonachlor	0.1	nd	nd			
DDE	0.1	nd	nd			
Dieldrin	0.1	nd	nd			
Endrin	0.1	nd	nd			
DDD	0.1	nd	nd			
Endosulfan 2	0.1	nd	nd			
DDT	0.1	nd	nd			
Endosulfan sulfate	0.1	nd	nd			
Methoxychlor	0.1	nd	nd			
2.4.5.6-TCMX-SURROGATE	1	110%	100%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E0999

Client : Coffey Geosciences Pty Ltd

Reference : E12726/4/27325-6

Project : E12723/4 AREA B

Analyte	Lab No	E184443	E184445			
		HA25	HA26			
	Sample Id	0.0-0.1	0.0-0.1			
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd			
Mevinphos	0.5	nd	nd			
Ethoprop	0.5	nd	nd			
Phorate	0.5	nd	nd			
Demeton-s-methyl	0.5	nd	nd			
Diazinon	0.5	nd	nd			
Disulfoton	0.5	nd	nd			
Ronnel	0.5	nd	nd			
Chlorpyrifos methyl	0.5	nd	nd			
Chlorpyrifos	0.5	nd	nd			
Merphos	0.5	nd	nd			
Parathion methyl	0.5	nd	nd			
Fenthion	0.5	nd	nd			
Malathion	0.5	nd	nd			
Fenitrothion	0.5	nd	nd			
Prothiophos	0.5	nd	nd			
Stirophos	0.5	nd	nd			
Ethion	0.5	nd	nd			
Bolstar	0.5	nd	nd			
Fensulfothion	0.5	nd	nd			
Azinphos methyl	0.5	nd	nd			
Coumaphos	0.5	nd	nd			
2-Nitro-m-xylene-SURROGATE	1	74%	77%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5611/ 8146 / 1 - 8
Your ref: 5E0999
NATA Accreditation No: 14484

31 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of eight samples, forwarded by Amdel Laboratories Ltd, on 29 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5611 / 8146 / 1. 5E0999 - CBH72 - E184433.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

Sample No. 2. ASET5611 / 8146 / 2. 5E0999 - CBH73 - E184435.
Approx dimensions 4.0 cm x 4.0 cm x 0.8 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

Sample No. 3. ASET5611 / 8146 / 3. 5E0999 - CBH74 - E184436.
Approx dimensions 4.0 cm x 4.0 cm x 1.2 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

Sample No. 4. ASET5611 / 8146 / 4. 5E0999 - HA22 - E184439.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET5611 / 8146 / 5. 5E0999 - HA23 - E184440.
Approx dimensions 4.0 cm x 4.0 cm x 0.5 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 6. ASET5611 / 8146 / 6. 5E0999 - HA24 - E184441.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 7. ASET5611 / 8146 / 7. 5E0999 - HA25 - E184443.
Approx dimensions 4.0 cm x 4.0 cm x 0.7 cm
The sample consisted of mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 8. ASET5611 / 8146 / 8. 5E0999 - HA26 - E184445.
Approx dimensions 4.0 cm x 4.0 cm x 0.6 cm
The sample consisted of mixture of clayish soil and stones.
No asbestos detected.

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E0999

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes
Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX in Soils done under
NATA Accreditation Number:14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E0999

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E0999

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184433)							
C6-C9 Fraction	100	70		70%			
E1221 TPH in Soil (E184433)							
C10-C14 Fraction							
C15-C28 Fraction	550	480		87%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E184433)							
Benzene	10	8.0		80%			
Toluene	10	10		100%			
Ethylbenzene	10	9		93%			
m&p-Xylene	20	19		95%			
o-Xylene	10	10		102%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	74			75%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			93%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	8.4			84%		
Toluene	10	11			110%		
Ethylbenzene	10	10			99%		
m&p-Xylene	20	20			98%		
o-Xylene	10	10			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184433)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E184433)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E184433)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E184433)							
Arsenic	50	41		82%			
Cadmium	50	36		72%			
Chromium	50	43		85%			
Copper	50	35		70%			
Nickel	50	50		101%			
Lead	50	57		113%			
Zinc	50	42		84%			
E5950 Mercury in Soil (E184433)							
Mercury	0.50	0.43		87%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	42			84%		
Cadmium	50	40			81%		
Chromium	50	43			87%		
Copper	50	44			87%		
Nickel	50	42			84%		
Lead	50	44			88%		
Zinc	50	40			80%		
E5950 Mercury in Soil							
Mercury	0.50	0.40			80%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E184433,E184434)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	51	54	53	5%	14	11	13	23%
Copper	18	22	20	19%	6	5	6	18%
Nickel	54	57	56	5%	14	12	13	15%
Lead	10	13	12	26%	nd	nd		
Zinc	38	50	44	27%	26	21	24	21%
E5950 Mercury in Soil (E184433,E184434)								
Mercury	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E184433)							
Naphthalene	5	4.0		80%			
Acenaphthylene	5	3.8		78%			
Acenaphthene	5	4.0		79%			
Fluorene	5	4.0		80%			
Phenanthrene	5	4.0		82%			
Anthracene	5	3.8		77%			
Fluoranthene	5	4.2		83%			
Pyrene	5	4.0		81%			
Benz(a)anthracene	5	4.0		81%			
Chrysene	5	4.0		79%			
Benzo(b) & (k)fluoranthene	10	8		83%			
Benzo(a)pyrene	5	4.2		82%			
Indeno(1.2.3-cd)pyrene	5	4.0		81%			
Dibenz(a.h)anthracene	5	3.8		78%			
Benzo(g.h.i)perylene	5	4.0		79%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.2			85%		
Acenaphthylene	5	4.2			84%		
Acenaphthene	5	4.2			86%		
Fluorene	5	4.2			85%		
Phenanthrene	5	4.4			87%		
Anthracene	5	4.2			85%		
Fluoranthene	5	4.2			85%		
Pyrene	5	4.2			84%		
Benz(a)anthracene	5	4.0			80%		
Chrysene	5	4.2			83%		
Benzo(b) & (k)fluoranthene	10	8			84%		
Benzo(a)pyrene	5	3.8			78%		
Indeno(1.2.3-cd)pyrene	5	4.2			83%		
Dibenz(a.h)anthracene	5	4.2			82%		
Benzo(g.h.i)perylene	5	4.2			84%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E184433)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.0			91%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	9			89%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	8			81%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	9			90%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			88%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			106%		
a-BHC	0.5	0.5			106%		
g-BHC	0.5	0.5			106%		
Heptachlor	0.5	0.5			106%		
Aldrin	0.5	0.5			106%		
b-BHC	0.5	0.5			106%		
d-BHC	0.5	0.5			108%		
Oxychlordane	0.5	0.5			106%		
Heptachlor epoxide	0.5	0.5			106%		
Endosulfan 1	0.5	0.5			106%		
Chlordane-Trans	0.5	0.5			106%		
Chlordane-Cis	0.5	0.5			104%		
trans-Nonachlor	0.5	0.5			108%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			106%		
Endrin	0.5	0.6			118%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			108%		
DDT	1	1.0			100%		
Endosulfan sulfate	0.5	0.5			108%		
Methoxychlor	0.5	0.6			110%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E0999

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	4.4			88%		
Mevinphos	5	4.8			96%		
Ethoprop	5	5.4			108%		
Phorate	5	5.4			108%		
Demeton-s-methyl	5	5.4			108%		
Diazinon	5	5.4			108%		
Disulfoton	5	5.4			108%		
Ronnel	5	5.4			106%		
Chlorpyrifos methyl	5	5.4			107%		
Chlorpyrifos	5	5.8			114%		
Parathion methyl	5	5.4			107%		
Fenthion	5	4.8			96%		
Malathion	5	5.4			106%		
Fenitrothion	5	5.4			106%		
Prothiophos	5	5.4			106%		
Stirophos	5	5.4			106%		
Ethion	5	5.4			106%		
Bolstar	5	5.4			108%		
Fensulfothion	5	5.6			110%		
Azinphos methyl	5	5.4			108%		
Coumaphos	5	5.4			106%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 331 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE.NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 16/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order: E12726/4/27525-6
Project: E12723/4 AREA B
Our Reference Number : 5E0999
Date Received by Amdel : 16/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	13	
TPH C6-C9 by Purge & Trap	E1230	10	Amdel's turnaround times
TPH (C10-C36)	E1221	10	are typically 3-5 working
Benzene,Toluene,Ethylbenzene & Xylene	E1010	7	days.
Volatile Organic Compounds	E1290	3	
Metals by ICP-AES	E5910	13	
Mercury in Soil	E5950	13	
Polycyclic Aromatic Hydrocarbons	E1110	10	
Organochlorine Pesticides	E1080	2	
Organophosphorus Pesticides	E1090	2	
Asbestos	E8110	8	
Samples on Hold (Soil)	E7600	4	
Samples on Hold (Water)	E7605	2	

QCNOTE10

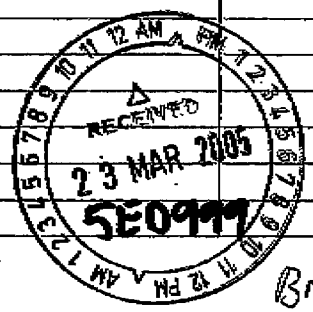
Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

Area	Sample ID	Date Collected	Comments	Analysis						
Area B				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
E184433	CBH72 0.2-0.3	15/3/05		1			1			1
34	CBH72 0.5-0.7	15/3/05					1			
35	CBH73 0.1-0.3	15/3/05		1			1			1
36	CBH74 0.15-0.25	15/3/05		1			1			1
37	CBH74 0.5-0.7	15/3/05					1			
38	HA22 0.15-0.2	15/3/05				1	1			
39	HA22 0.5-0.6	15/3/05		1			1			1
40	HA23 0.15-0.2	15/3/05				1	1			1
41	HA24 0.15-0.25	15/3/05				1	1			1
	HA24 PACM	15/3/05	Not Received							
42	HA24 0.6-0.7	15/03/2005		1			1			
43	HA25 0.0-0.1	15/3/05		1			1	1	1	1
44	HA25 0.4-0.5	15/3/05	Poor Sample							
45	HA26 0.0-0.1	15/3/05		1			1	1	1	1
46	HA26 0.4-0.5	15/3/05					1			
47	HA27 0.0-0.1	15/3/05								
48	HA27 0.7-0.8	15/3/05								
50	DUPB7	15/3/05								
51	TS B 15/3/05	15/3/05								
52	TS B 15/3/05	15/3/05								
	CBH77 0.1-0.2	16/3/05		1			1			
	CBH77 0.5-0.6	16/3/05				1	1			1
	CBH77 1.0-1.2	16/3/05					1			
	CBH79 0.2-0.3	16/3/05				1	1			1
	CBH79 0.5-0.95	16/3/05				1	1			
	CBH80 0.2-0.3	16/3/05				1	1			
	CBH80 0.5-0.95	16/3/05					1			1
	CBH80 1.1-1.3	16/3/05								
	CBH82 0.2-0.3	16/3/05				1	1			1



Br, 23/3/05

AREA B

No: 27325

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMOCL	Sampled by: Adam Gibbs / James Dutton	Consigning Office: SYD Date Dispatched: 15/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gibbs	15/3/05	4pm	Emily Liz Pritstock	15/3	4.30
Adam Gibbs				16/3	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals	Sample Condition on Receipt
	soil	Glass Unpreserved	CBH72 MW6 0.2-0.3	15/3/05					
			" 0.5-0.7						
			CBH73 MW8 0.1-0.3						
			CBH74 MW9 0.15-0.2						
			" 0.5-0.7				HOLD SAMPLES		
			HA22 0.15-0.2						
			" 0.5-0.6						
			HA23 0.15-0.2						
			HA24 0.15-0.25						
			" 0.6-0.7						
			HA25 0.0-0.1						
			" 0.4-0.5						
			HA26 0.0-0.1						
			" 0.4-0.5						
			HA27 0.0-0.1						
			" 0.7-0.8						
			HA29 PACM		NOT RECEIVED				

WAITING FOR FURTHER INSTRUCTIONS

5 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

AREA B

No: 27326

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/1 Sheet 2 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Gilks, James Osten	Consigning Office: SYD Date Dispatched: 15/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gilks	15/3/05	4pm	Liz Pitsch	15/3	6.30
Adam Gilks				16/3	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
	soil	Glass Unpreserved	DUP B7	15/3/05		HOLD SAMPLES FOR FURTHER INSTRUCTIONS			
	"	"	DUP B8	"		SEND TO AUS			
	water		TS B15/3/05	"		HOLD SAMPLES FOR FURTHER INSTRUCTIONS			
	water		TB B15/3/05	"					
			TS050310.12		93	5			

15 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1018
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	29
Reference/Order	:	E12723/4/27327-8
Project	:	E12723/4 AREA B
Received Samples	:	16/03/05
Instructions	:	15/03/05
Date Reported	:	12/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1018

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	24/03/05	24/03/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	24/03/05	11/04/05	JMC	094
E1221	TPH (C10-C36)	24/03/05	25/03/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	24/03/05	11/04/05	JMC	094
E5910	Metals by ICP-AES	31/03/05	31/03/05	DLU	093
E5950	Mercury in Soil	31/03/05	31/03/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	24/03/05	29/03/05	MFA	095
E1290	Volatile Organic Compounds	24/03/05	29/03/05	GTO	094
E1080	Organochlorine Pesticides	24/02/05	30/03/05	MFA	095
E1090	Organophosphorus Pesticides	24/03/05	30/03/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184691	E184692	E184693	E184694	E184695
		CBH77	CBH77	CBH77	CBH79	CBH79
	Sample Id	0.1-0.2	0.5-0.6	1.0-1.2	0.2-0.3	0.5-0.95
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	5%	5%	7%	21%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	--	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	--	nd	10
C15-C28 Fraction	50	nd	nd	--	nd	nd
C29-C36 Fraction	50	nd	nd	--	nd	60
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	--	--	--
Toluene	1	nd	--	--	--	--
Ethylbenzene	1	nd	--	--	--	--
m&p-Xylene	2	nd	--	--	--	--
o-Xylene	1	nd	--	--	--	--
4-Bromofluorobenzene-SURROGATE	1	99%	--	--	--	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184696	E184697	E184699	E184700	E184701
		CBH80	CBH80	CBH82	CBH82	CBH83
	Sample Id	0.2-0.3	0.5-0.95	0.2-0.3	0.5-0.95	0.2-0.3
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	5%	4%	3%	7%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--	nd	nd	--
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--	nd	nd	--
C15-C28 Fraction	50	nd	--	nd	nd	--
C29-C36 Fraction	50	nd	--	nd	nd	--
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	--	--	--
Toluene	1	--	--	--	--	--
Ethylbenzene	1	--	--	--	--	--
m&p-Xylene	2	--	--	--	--	--
o-Xylene	1	--	--	--	--	--
4-Bromofluorobenzene-SURROGATE	1	--	--	--	--	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184702	E184703	E184704	E184705	E184706
		CBH83	CBH83	CBH84	CBH84	CBH85
	Sample Id	1.2-1.65	0.5-0.95	0.2-0.3	0.4-0.5	0.15-.25
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	7%	3%	6%	7%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	--	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	--	nd	nd	nd	nd
C15-C28 Fraction	50	--	nd	nd	nd	nd
C29-C36 Fraction	50	--	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	--	--	nd
Toluene	1	--	--	--	--	nd
Ethylbenzene	1	--	--	--	--	nd
m&p-Xylene	2	--	--	--	--	nd
o-Xylene	1	--	--	--	--	nd
4-Bromofluorobenzene-SURROGATE	1	--	--	--	--	95%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184707	E184708	E184709	E184710	E184711
		CBH85	CBH85	CBH86	CBH86	HA25
	Sample Id	0.5-0.6	1.1-1.45	0.2-0.3	0.5-0.95	0.6-0.7
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	5%	4%	2%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	--	nd	nd
Toluene	1	--	--	--	nd	nd
Ethylbenzene	1	--	--	--	nd	nd
m&p-Xylene	2	--	--	--	nd	nd
o-Xylene	1	--	--	--	nd	nd
4-Bromofluorobenzene-SURROGATE	1	--	--	--	92%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184712	E184713	E184714	E184715	E184716
		HA29	HA29	HA28	HA28	DUPB9
	Sample Id	0.15-0.2	0.6-0.7	0.0-0.1	0.8-0.9	16.3.05
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	12%	16%	3%	7%	11%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--	nd	--	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--	nd	--	nd
C15-C28 Fraction	50	nd	--	nd	--	nd
C29-C36 Fraction	50	nd	--	nd	--	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	nd	--	nd
Toluene	1	--	--	nd	--	nd
Ethylbenzene	1	--	--	nd	--	nd
m&p-Xylene	2	--	--	nd	--	nd
o-Xylene	1	--	--	nd	--	nd
4-Bromofluorobenzene-SURROGATE	1	--	--	97%	--	91%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27327-8

Project : E12723/4 AREA B

Analyte	Lab No	E184691	E184692	E184693	E184694	E184695
		CBH77	CBH77	CBH77	CBH79	CBH79
	Sample Id	0.1-0.2	0.5-0.6	1.0-1.2	0.2-0.3	0.5-0.95
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	6	nd	14
Copper	5	nd	13	8	6	nd
Nickel	2	nd	4	3	4	nd
Lead	5	35	76	74	6	6
Zinc	5	77	110	97	56	30
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	0.06	0.07	0.07

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184696	E184697	E184699	E184700	E184701
		CBH80	CBH80	CBH82	CBH82	CBH83
	Sample Id	0.2-0.3	0.5-0.95	0.2-0.3	0.5-0.95	0.2-0.3
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	1.0
Chromium	5	nd	nd	8	nd	nd
Copper	5	nd	nd	nd	nd	9
Nickel	2	3	nd	5	nd	4
Lead	5	6	8	5	nd	17
Zinc	5	31	39	40	18	49
E5950 Mercury in Soil						
Mercury	0.05	0.07	0.06	nd	nd	0.06

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184702	E184703	E184704	E184705	E184706
		CBH83	CBH83	CBH84	CBH84	CBH85
	Sample Id	1.2-1.65	0.5-0.95	0.2-0.3	0.4-0.5	0.15-.25
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	9	nd	5
Copper	5	nd	6	5	nd	18
Nickel	2	nd	2	5	nd	7
Lead	5	nd	47	7	8	22
Zinc	5	18	88	40	32	83
E5950 Mercury in Soil						
Mercury	0.05	nd	0.06	nd	nd	0.08

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184707	E184708	E184709	E184710	E184711
		CBH85	CBH85	CBH86	CBH86	HA25
	Sample Id	0.5-0.6	1.1-1.45	0.2-0.3	0.5-0.95	0.6-0.7
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	11	nd	nd	nd	6
Copper	5	20	nd	nd	nd	nd
Nickel	2	13	nd	nd	nd	2
Lead	5	24	9	10	nd	nd
Zinc	5	200	25	33	18	23
E5950 Mercury in Soil						
Mercury	0.05	0.08	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184712	E184713	E184714	E184715	E184716
		HA29	HA29	HA28	HA28	DUPB9
	Sample Id	0.15-0.2	0.6-0.7	0.0-0.1	0.8-0.9	16.3.05
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	5
Copper	5	nd	nd	5	nd	13
Nickel	2	nd	nd	nd	nd	6
Lead	5	6	nd	6	nd	24
Zinc	5	31	25	27	25	74
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27327-8

Project : E12723/4 AREA B

Analyte	Lab No	E184691	E184692	E184694	E184695	E184696
		CBH77	CBH77	CBH79	CBH79	CBH80
	Sample Id	0.1-0.2	0.5-0.6	0.2-0.3	0.5-0.95	0.2-0.3
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	1.0	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	1.0	nd
2-Fluorobiphenyl-SURROGATE	1	100%	86%	89%	85%	91%
Anthracene-d10-SURROGATE	1	95%	82%	90%	84%	92%
p-Terphenyl-D14-SURROGATE	1	98%	87%	92%	84%	93%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184699	E184700	E184703	E184704	E184705
		CBH82	CBH82	CBH83	CBH84	CBH84
	Sample Id	0.2-0.3	0.5-0.95	0.5-0.95	0.2-0.3	0.4-0.5
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	0.7
Pyrene	0.5	nd	nd	nd	nd	0.9
Benz(a)anthracene	0.5	nd	nd	nd	nd	0.5
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	1
Benzo(a)pyrene	0.5	nd	nd	nd	nd	0.5
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	3.6
2-Fluorobiphenyl-SURROGATE	1	90%	84%	87%	89%	84%
Anthracene-d10-SURROGATE	1	94%	87%	87%	89%	82%
p-Terphenyl-D14-SURROGATE	1	96%	87%	89%	92%	85%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184706	E184707	E184708	E184709	E184710
		CBH85	CBH85	CBH85	CBH86	CBH86
	Sample Id	0.15-.25	0.5-0.6	1.1-1.45	0.2-0.3	0.5-0.95
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	92%	81%	86%	87%	90%
Anthracene-d10-SURROGATE	1	86%	79%	83%	89%	86%
p-Terphenyl-D14-SURROGATE	1	92%	82%	86%	90%	89%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184711	E184712	E184714	E184716	
		HA25	HA29	HA28	DUPB9	
	Sample Id	0.6-0.7	0.15-0.2	0.0-0.1	16.3.05	
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	
Acenaphthylene	0.5	nd	nd	nd	nd	
Acenaphthene	0.5	nd	nd	nd	nd	
Fluorene	0.5	nd	nd	nd	nd	
Phenanthrene	0.5	nd	nd	nd	nd	
Anthracene	0.5	nd	nd	nd	nd	
Fluoranthene	0.5	nd	nd	nd	nd	
Pyrene	0.5	nd	nd	nd	nd	
Benz(a)anthracene	0.5	nd	nd	nd	nd	
Chrysene	0.5	nd	nd	nd	nd	
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	
Benzo(a)pyrene	0.5	nd	nd	nd	nd	
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	
2-Fluorobiphenyl-SURROGATE	1	86%	87%	89%	96%	
Anthracene-d10-SURROGATE	1	86%	88%	87%	94%	
p-Terphenyl-D14-SURROGATE	1	87%	87%	90%	97%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27327-8

Project : E12723/4 AREA B

Analyte	Lab No	E184692	E184694	E184695	E184696	E184699
		CBH77	CBH79	CBH79	CBH80	CBH82
	Sample Id	0.5-0.6	0.2-0.3	0.5-0.95	0.2-0.3	0.2-0.3
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Bromobenzene	1	nd	nd	nd	nd	nd
Bromochloromethane	1	nd	nd	nd	nd	nd
Bromodichloromethane	1	nd	nd	nd	nd	nd
Bromoform	1	nd	nd	nd	nd	nd
Bromomethane	1	nd	nd	nd	nd	nd
n-Butylbenzene	1	nd	nd	nd	nd	nd
sec-Butylbenzene	1	nd	nd	nd	nd	nd
tert-Butylbenzene	1	nd	nd	nd	nd	nd
Carbon tetrachloride	1	nd	nd	nd	nd	nd
Chlorobenzene	1	nd	nd	nd	nd	nd
Chloroethane	1	nd	nd	nd	nd	nd
Chloroform	1	nd	nd	nd	nd	nd
Chloromethane	1	nd	nd	nd	nd	nd
2-Chlorotoluene	1	nd	nd	nd	nd	nd
4-Chlorotoluene	1	nd	nd	nd	nd	nd
Dibromochloromethane	1	nd	nd	nd	nd	nd
1.2-Dibromo-3-chloropropane	1	nd	nd	nd	nd	nd
1.2-Dibromoethane (EDB)	1	nd	nd	nd	nd	nd
Dibromomethane	1	nd	nd	nd	nd	nd
1.2-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.3-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.4-Dichlorobenzene	1	nd	nd	nd	nd	nd
Dichlorodifluoromethane	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184692	E184694	E184695	E184696	E184699
		CBH77	CBH79	CBH79	CBH80	CBH82
	Sample Id	0.5-0.6	0.2-0.3	0.5-0.95	0.2-0.3	0.2-0.3
	PQL					
1.1-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloroethane	1	nd	nd	nd	nd	nd
1.1-Dichloroethane	1	nd	nd	nd	nd	nd
cis-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
trans-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.3-Dichloropropane	1	nd	nd	nd	nd	nd
2.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.1-Dichloropropylene	1	nd	nd	nd	nd	nd
cis-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
trans-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
Hexachlorobutadiene	1	nd	nd	nd	nd	nd
Isopropylbenzene	1	nd	nd	nd	nd	nd
p-Isopropyltoluene	1	nd	nd	nd	nd	nd
Methylene chloride	1	nd	nd	nd	nd	nd
Naphthalene	1	nd	nd	1	nd	nd
n-Propylbenzene	1	nd	nd	nd	nd	nd
Styrene	1	nd	nd	nd	nd	nd
1.1.1.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
1.1.2.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
1.2.3-Trichlorobenzene	1	nd	nd	nd	nd	nd
1.2.4-Trichlorobenzene	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184692	E184694	E184695	E184696	E184699
		CBH77	CBH79	CBH79	CBH80	CBH82
	Sample Id	0.5-0.6	0.2-0.3	0.5-0.95	0.2-0.3	0.2-0.3
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd	nd	nd
1.1.2-Trichloroethane	1	nd	nd	nd	nd	nd
Trichloroethene	1	nd	nd	nd	nd	nd
Trichlorofluoromethane	1	nd	nd	nd	nd	nd
1.2.3-Trichloropropane	1	nd	nd	nd	nd	nd
1.2.4-Trimethylbenzene	1	nd	nd	2	nd	nd
1.3.5-Trimethylbenzene	1	nd	nd	nd	nd	nd
Vinyl chloride	1	nd	nd	nd	nd	nd
ortho-Xylene	1	nd	nd	nd	nd	nd
meta- & para-Xylene	2	nd	nd	nd	nd	nd
Pentafluorobenzene-SURROGATE	1	98%	95%	95%	96%	96%
Toluene-D8-SURROGATE	1	100%	100%	99%	100%	100%
4-Bromofluorobenzene-SURROGATE	1	95%	95%	95%	95%	94%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184700	E184703	E184704	E184705	E184707
		CBH82	CBH83	CBH84	CBH84	CBH85
	Sample Id	0.5-0.95	0.5-0.95	0.2-0.3	0.4-0.5	0.5-0.6
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Bromobenzene	1	nd	nd	nd	nd	nd
Bromochloromethane	1	nd	nd	nd	nd	nd
Bromodichloromethane	1	nd	nd	nd	nd	nd
Bromoform	1	nd	nd	nd	nd	nd
Bromomethane	1	nd	nd	nd	nd	nd
n-Butylbenzene	1	nd	nd	nd	nd	nd
sec-Butylbenzene	1	nd	nd	nd	nd	nd
tert-Butylbenzene	1	nd	nd	nd	nd	nd
Carbon tetrachloride	1	nd	nd	nd	nd	nd
Chlorobenzene	1	nd	nd	nd	nd	nd
Chloroethane	1	nd	nd	nd	nd	nd
Chloroform	1	nd	nd	nd	nd	nd
Chloromethane	1	nd	nd	nd	nd	nd
2-Chlorotoluene	1	nd	nd	nd	nd	nd
4-Chlorotoluene	1	nd	nd	nd	nd	nd
Dibromochloromethane	1	nd	nd	nd	nd	nd
1.2-Dibromo-3-chloropropane	1	nd	nd	nd	nd	nd
1.2-Dibromoethane (EDB)	1	nd	nd	nd	nd	nd
Dibromomethane	1	nd	nd	nd	nd	nd
1.2-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.3-Dichlorobenzene	1	nd	nd	nd	nd	nd
1.4-Dichlorobenzene	1	nd	nd	nd	nd	nd
Dichlorodifluoromethane	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184700	E184703	E184704	E184705	E184707
		CBH82	CBH83	CBH84	CBH84	CBH85
	Sample Id	0.5-0.95	0.5-0.95	0.2-0.3	0.4-0.5	0.5-0.6
	PQL					
1.1-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloroethane	1	nd	nd	nd	nd	nd
1.1-Dichloroethane	1	nd	nd	nd	nd	nd
cis-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
trans-1.2-Dichloroethene	1	nd	nd	nd	nd	nd
1.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.3-Dichloropropane	1	nd	nd	nd	nd	nd
2.2-Dichloropropane	1	nd	nd	nd	nd	nd
1.1-Dichloropropylene	1	nd	nd	nd	nd	nd
cis-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
trans-1.3-Dichloropropylene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
Hexachlorobutadiene	1	nd	nd	nd	nd	nd
Isopropylbenzene	1	nd	nd	nd	nd	nd
p-Isopropyltoluene	1	nd	nd	nd	nd	nd
Methylene chloride	1	nd	nd	nd	nd	nd
Naphthalene	1	nd	nd	nd	nd	nd
n-Propylbenzene	1	nd	nd	nd	nd	nd
Styrene	1	nd	nd	nd	nd	nd
1.1.1.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
1.1.2.2-Tetrachloroethane	1	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
1.2.3-Trichlorobenzene	1	nd	nd	nd	nd	nd
1.2.4-Trichlorobenzene	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184700	E184703	E184704	E184705	E184707
		CBH82	CBH83	CBH84	CBH84	CBH85
	Sample Id	0.5-0.95	0.5-0.95	0.2-0.3	0.4-0.5	0.5-0.6
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd	nd	nd
1.1.2-Trichloroethane	1	nd	nd	nd	nd	nd
Trichloroethene	1	nd	nd	nd	nd	nd
Trichlorofluoromethane	1	nd	nd	nd	nd	nd
1.2.3-Trichloropropane	1	nd	nd	nd	nd	nd
1.2.4-Trimethylbenzene	1	nd	nd	nd	nd	nd
1.3.5-Trimethylbenzene	1	nd	nd	nd	nd	nd
Vinyl chloride	1	nd	nd	nd	nd	nd
ortho-Xylene	1	nd	nd	nd	nd	nd
meta- & para-Xylene	2	nd	nd	nd	nd	nd
Pentafluorobenzene-SURROGATE	1	96%	96%	96%	96%	95%
Toluene-D8-SURROGATE	1	100%	100%	100%	99%	100%
4-Bromofluorobenzene-SURROGATE	1	94%	95%	95%	95%	95%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184708	E184709	E184712		
		CBH85	CBH86	HA29		
	Sample Id	1.1-1.45	0.2-0.3	0.15-0.2		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184708	E184709	E184712		
		CBH85	CBH86	HA29		
	Sample Id	1.1-1.45	0.2-0.3	0.15-0.2		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27327-8
Project : E12723/4 AREA B

Analyte	Lab No	E184708	E184709	E184712		
		CBH85	CBH86	HA29		
	Sample Id	1.1-1.45	0.2-0.3	0.15-0.2		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Trichlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	96%	96%	95%		
Toluene-D8-SURROGATE	1	99%	100%	100%		
4-Bromofluorobenzene-SURROGATE	1	95%	97%	95%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27327-8

Project : E12723/4 AREA B

Analyte	Lab No	E184714				
		HA28				
	Sample Id	0.0-0.1				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	107%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1018

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27327-8

Project : E12723/4 AREA B

Analyte	Lab No	E184714				
		HA28				
	Sample Id	0.0-0.1				
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Merphos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				
2-Nitro-m-xylene-SURROGATE	1	76%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5610/ 8145 / 1 - 9
Your ref: 5E1018
NATA Accreditation No: 14484

31 March 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff,
NSW 2285.

Attn: Ms. Julie Edman
Fax No:02 - 4902 4899

Dear Julie,

This report presents the results of nine samples, forwarded by Amdel Laboratories Ltd, on 29 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5610 / 8145 / 1. E184692 / CBH77.
Approx dimensions 4.5 cm x 4.5 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 2. ASET5610 / 8145 / 2. E184694 / CBH79.
Approx dimensions 4.5 cm x 4.5 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 3. ASET5610 / 8145 / 3. E184697 / CBH80.
Approx dimensions 4.5 cm x 4.5 cm x 1.3 cm
The sample consisted of mixture of sandy soil, stones, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 4. ASET5610 / 8145 / 4. E184699 / CBH82.
Approx dimensions 4.5 cm x 4.5 cm x 1.5 cm
The sample consisted of mixture of sandy soil, stones, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 5. ASET5610 / 8145 / 5. E184703 / CBH83.
Approx dimensions 4.5 cm x 4.5 cm x 1.2 cm
The sample consisted of mixture of sandy soil, stones, fragments of bitumen and plaster.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 6. ASET5610 / 8145 / 6. E184704 / CBH84.
Approx dimensions 4.5 cm x 4.5 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 7. ASET5610 / 8145 / 7. E184706 / CBH85.
Approx dimensions 4.5 cm x 4.5 cm x 1.3 cm
The sample consisted of mixture of sandy soil, stones, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 8. ASET5610 / 8145 / 8. E184712 / HA29.
Approx dimensions 4.5 cm x 4.5 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 9. ASET5610 / 8145 / 9. E184714 / HA28.
Approx dimensions 4.5 cm x 4.5 cm x 1.4 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

NATA Accredited Laboratory
Number: 1448

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian/national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Michaela Foley B EnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1018

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1018

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184691,E184711)							
C6-C9 Fraction	100	91		91%			
E1221 TPH in Soil (E184694,E184711)							
C10-C14 Fraction							
C15-C28 Fraction	550	440		81%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E184691,E184711)							
Benzene	10	11		113%			
Toluene	10	10		105%			
Ethylbenzene	10	10		99%			
m&p-Xylene	20	20		101%			
o-Xylene	10	11		110%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	81			81%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	440			81%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.6			96%		
Toluene	10	9			89%		
Ethylbenzene	10	9			85%		
m&p-Xylene	20	17			87%		
o-Xylene	10	9			93%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184691,E184692)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E184694,E184695)								
C10-C14 Fraction	nd	nd			10	10	10	0%
C15-C28 Fraction	nd	nd			nd	nd		
C29-C36 Fraction	nd	nd			70	60	70	15%
E1010 BTEX (P&T) in Soil (E184691)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E184691,E184711)							
Arsenic	50	45	42	89%	84%	86%	6%
Cadmium	50	41	40	83%	81%	82%	2%
Chromium	50	45	43	91%	86%	88%	5%
Copper	50	43	42	87%	84%	85%	3%
Nickel	50	42	42	85%	83%	84%	2%
Lead	50	38	41	75%	83%	79%	9%
Zinc	50	38	39	76%	79%	77%	4%
E5950 Mercury in Soil (E184691,E184711)							
Mercury	0.50	0.40	0.39	80%	79%	80%	2%

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	42	41		83%	83%	
Cadmium	50	41	41		82%	82%	
Chromium	50	44	44		88%	88%	
Copper	50	44	44		88%	88%	
Nickel	50	43	43		85%	85%	
Lead	50	44	44		88%	88%	
Zinc	50	41	41		82%	81%	
E5950 Mercury in Soil							
Mercury	0.50	0.63	0.43		126%	85%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E184691,E184692)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	nd	nd			6	nd	6	
Copper	nd	nd			10	13	12	26%
Nickel	nd	nd			5	4	5	22%
Lead	35	35	35	0%	58	76	67	26%
Zinc	79	77	78	2%	87	110	99	23%
E5910 Metals in Soil (E184711)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	6	6	6	0%				
Copper	nd	nd						
Nickel	2	2	2	0%				
Lead	nd	nd						
Zinc	22	23	23	4%				
E5950 Mercury in Soil (E184691,E184692)								
Mercury	nd	nd			nd	nd		
E5950 Mercury in Soil (E184711)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E184694,E184711)							
Naphthalene	5	3.8		77%			
Acenaphthylene	5	4.0		79%			
Acenaphthene	5	3.8		76%			
Fluorene	5	4.0		79%			
Phenanthrene	5	3.8		77%			
Anthracene	5	3.8		76%			
Fluoranthene	5	4.0		78%			
Pyrene	5	4.0		80%			
Benz(a)anthracene	5	4.0		79%			
Chrysene	5	3.8		74%			
Benzo(b) & (k)fluoranthene	10	8		81%			
Benzo(a)pyrene	5	4.2		85%			
Indeno(1.2.3-cd)pyrene	5	4.2		83%			
Dibenz(a.h)anthracene	5	4.0		82%			
Benzo(g.h.i)perylene	5	4.0		80%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			78%		
Acenaphthylene	5	4.0			79%		
Acenaphthene	5	4.0			79%		
Fluorene	5	4.0			79%		
Phenanthrene	5	4.0			80%		
Anthracene	5	4.0			78%		
Fluoranthene	5	4.0			78%		
Pyrene	5	4.0			78%		
Benz(a)anthracene	5	3.8			77%		
Chrysene	5	3.8			77%		
Benzo(b) & (k)fluoranthene	10	8			78%		
Benzo(a)pyrene	5	3.8			76%		
Indeno(1.2.3-cd)pyrene	5	3.8			75%		
Dibenz(a.h)anthracene	5	3.8			78%		
Benzo(g.h.i)perylene	5	4.0			80%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E184694,E184695)								
Naphthalene	nd	nd			1.0	1.0	1.0	0%
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	nd	nd			nd	nd		
Pyrene	nd	nd			nd	nd		
Benz(a)anthracene	nd	nd			nd	nd		
Chrysene	nd	nd			nd	nd		
Benzo(b) & (k)fluoranthene	nd	nd			nd	nd		
Benzo(a)pyrene	nd	nd			nd	nd		
Indeno(1.2.3-cd)pyrene	nd	nd			nd	nd		
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1290 Volatile Organic Compounds in Soil	(E184692, E184711)						
Benzene	10	7.8		77%			
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	8		81%			
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1-Dichloroethene	10	8		77%			
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	8		80%			
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	8		76%			
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	10			103%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			102%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	10			105%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	10			103%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	10			100%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1290 Volatile Organic Compounds in Soil (E184692,E184694)								
Benzene	nd	nd			nd	nd		
Bromobenzene	nd	nd			nd	nd		
Bromochloromethane	nd	nd			nd	nd		
Bromodichloromethane	nd	nd			nd	nd		
Bromoform	nd	nd			nd	nd		
Bromomethane	nd	nd			nd	nd		
n-Butylbenzene	nd	nd			nd	nd		
sec-Butylbenzene	nd	nd			nd	nd		
tert-Butylbenzene	nd	nd			nd	nd		
Carbon tetrachloride	nd	nd			nd	nd		
Chlorobenzene	nd	nd			nd	nd		
Chloroethane	nd	nd			nd	nd		
Chloroform	nd	nd			nd	nd		
Chloromethane	nd	nd			nd	nd		
2-Chlorotoluene	nd	nd			nd	nd		
4-Chlorotoluene	nd	nd			nd	nd		
Dibromochloromethane	nd	nd			nd	nd		
1.2-Dibromo-3-chloropropane	nd	nd			nd	nd		
1.2-Dibromoethane (EDB)	nd	nd			nd	nd		
Dibromomethane	nd	nd			nd	nd		
1.2-Dichlorobenzene	nd	nd			nd	nd		
1.3-Dichlorobenzene	nd	nd			nd	nd		
1.4-Dichlorobenzene	nd	nd			nd	nd		
Dichlorodifluoromethane	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1-Dichloroethene	nd	nd			nd	nd		
1.2-Dichloroethane	nd	nd			nd	nd		
1.1-Dichloroethane	nd	nd			nd	nd		
cis-1.2-Dichloroethene	nd	nd			nd	nd		
trans-1.2-Dichloroethene	nd	nd			nd	nd		
1.2-Dichloropropane	nd	nd			nd	nd		
1.3-Dichloropropane	nd	nd			nd	nd		
2.2-Dichloropropane	nd	nd			nd	nd		
1.1-Dichloropropylene	nd	nd			nd	nd		
cis-1.3-Dichloropropylene	nd	nd			nd	nd		
trans-1.3-Dichloropropylene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
Hexachlorobutadiene	nd	nd			nd	nd		
Isopropylbenzene	nd	nd			nd	nd		
p-Isopropyltoluene	nd	nd			nd	nd		
Methylene chloride	nd	nd			nd	nd		
Naphthalene	nd	nd			nd	nd		
n-Propylbenzene	nd	nd			nd	nd		
Styrene	nd	nd			nd	nd		
1.1.1.2-Tetrachloroethane	nd	nd			nd	nd		
1.1.2.2-Tetrachloroethane	nd	nd			nd	nd		
Tetrachloroethene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
1.2.3-Trichlorobenzene	nd	nd			nd	nd		
1.2.4-Trichlorobenzene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1018

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
1.1.1-Trichloroethane	nd	nd			nd	nd		
1.1.2-Trichloroethane	nd	nd			nd	nd		
Trichloroethene	nd	nd			nd	nd		
Trichlorofluoromethane	nd	nd			nd	nd		
1.2.3-Trichloropropane	nd	nd			nd	nd		
1.2.4-Trimethylbenzene	nd	nd			nd	nd		
1.3.5-Trimethylbenzene	nd	nd			nd	nd		
Vinyl chloride	nd	nd			nd	nd		
ortho-Xylene	nd	nd			nd	nd		
meta- & para-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			106%		
a-BHC	0.5	0.5			106%		
g-BHC	0.5	0.5			106%		
Heptachlor	0.5	0.5			106%		
Aldrin	0.5	0.5			106%		
b-BHC	0.5	0.5			106%		
d-BHC	0.5	0.5			108%		
Oxychlordane	0.5	0.5			106%		
Heptachlor epoxide	0.5	0.5			106%		
Endosulfan 1	0.5	0.5			106%		
Chlordane-Trans	0.5	0.5			106%		
Chlordane-Cis	0.5	0.5			104%		
trans-Nonachlor	0.5	0.5			108%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			106%		
Endrin	0.5	0.6			118%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			108%		
DDT	1	1.0			100%		
Endosulfan sulfate	0.5	0.5			108%		
Methoxychlor	0.5	0.6			110%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1018

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	4.4			88%		
Mevinphos	5	4.8			96%		
Ethoprop	5	5.4			108%		
Phorate	5	5.4			108%		
Demeton-s-methyl	5	5.4			108%		
Diazinon	5	5.4			108%		
Disulfoton	5	5.4			108%		
Ronnel	5	5.4			106%		
Chlorpyrifos methyl	5	5.4			107%		
Chlorpyrifos	5	5.8			114%		
Parathion methyl	5	5.4			107%		
Fenthion	5	4.8			96%		
Malathion	5	5.4			106%		
Fenitrothion	5	5.4			106%		
Prothiophos	5	5.4			106%		
Stirophos	5	5.4			106%		
Ethion	5	5.4			106%		
Bolstar	5	5.4			108%		
Fensulfothion	5	5.6			110%		
Azinphos methyl	5	5.4			108%		
Coumaphos	5	5.4			106%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FROM: Client Services Cardiff FAX NO: (02) 9911 1001

DATE: 16/03/05

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order: E12723/4/27327-8
Project: E12723/4 AREA B
Our Reference Number : SE1018
Date Received by Amdel : 16/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	25	Amdel's turnaround times are typically 3-5 working days.
Volatile Organic Compounds	E1290	13	
Benzene, Toluene, Ethylbenzene & Xylene	E1010	6	
TPH C6-C9 by Purge & Trap	E1230	19	
TPH (C10-C36)	E1221	19	
Metals by ICP-AES	E5910	25	
Mercury in Soil	E5950	25	
Polycyclic Aromatic Hydrocarbons	E1110	19	
Organochlorine Pesticides	E1080	1	
Organophosphorus Pesticides	E1090	1	
Asbestos	E8110	9	
Samples on Hold (Water)	E7605	3	

QCNOTE10

Sample integrity upon receipt

Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
Samples received in good condition and appropriately preserved for all tests.	YES
VOC/SVOC samples were received in teflon lined lids.	YES
VOC samples were received with Zero Headspace.	YES
Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

5E1018			TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
E184691	CBH77 0.1-0.2	16/3/05	1			1			
E184692	CBH77 0.5-0.6	16/3/05			1	1			1
E184693	CBH77 1.0-1.2	16/3/05				1			
E184694	CBH79 0.2-0.3	16/3/05			1	1			1
E184695	CBH79 0.5-0.95	16/3/05			1	1			
E184696	CBH80 0.2-0.3	16/3/05			1	1			
E184697	CBH80 0.5-0.95	16/3/05							1
E184698	CBH80 1.1-1.3	16/3/05			1	1			
E184699	CBH82 0.2-0.3	16/3/05			1	1			1
E184700	CBH82 0.5-0.95	16/3/05				1			
E184701	CBH83 0.2-0.3	16/3/05			1	1			1
E184703	CBH83 0.5-0.95	16/3/05				1			
E184702	CBH83 1.2-1.65	16/3/05			1	1			1
E184704	CBH84 0.2-0.3	16/3/05			1	1			
E184705	CBH84 0.4-0.5	16/3/05	1			1			1
E184706	CBH85 0.15-0.25	16/3/05			1	1			
E184707	CBH85 0.5-0.6	16/3/05			1	1			
E184708	CBH85 1.1-1.45	16/3/05			1	1			
E184709	CBH86 0.2-0.3	16/3/05	1			1			
E184710	CBH86 0.5-0.95	16/3/05	1			1			
E184711	HA25 0.6-0.7	16/3/05			1	1			1
E184712	HA29 0.15-0.2	16/3/05				1			
E184713	HA29 0.6-0.7	16/3/05	1			1	1	1	1
E184714	HA28 0.0-0.1	16/3/05				1			
E184715	HA28 0.8-0.9	16/3/05	1			1			
E184716	DUPB9	16/3/05							
E184717	TS B 16/3/05	16/3/05							
E184718	TB B 16/3/05	16/3/05							
E184719	WB B 16/3/05	16/3/05							

AREA B

No: 27327

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Cribb / Dave Dixon	Consigning Office: SYD Date Dispatched: 16/3/05
Attention: JULIE EMMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Cribb	16/3/05	4pm	Emily	16/3	6:30
Adam Cribb			Liz Pitstock	17/3	2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals	Sample Condition on Receipt
E184691	S	Glass Unpreserved	CBHTT 0.1-0.2	16/3/05					
92			" 0.5-0.6						
93			" 1.0-1.2						
96			CBH179 0.2-0.3						
95			" 0.5-0.95						
96			CBH180 0.2-0.3						
97			" 0.5-0.95						
98			" 1.1-1.3						
99			CBH182 0.2-0.3						
E184700			" 0.5-0.95						
01			CBH183 0.2-0.3						
02			" 1.2-1.55						
03			" 0.5-0.95						
04			CBH184 0.2-0.3						
05			" 0.4-0.5						
06			CBH185 0.15-0.25						
07			" 0.5-0.6						

HOLD AND WAIT FOR INSTRUCTIONS

10 MAR 2005 SET OF 8

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. · YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

AREA B

No: 27328

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4

Sheet 2 of 2

Coffey

Dispatch to: (Address & Phone No.) AMPCL	Sampled by: Adam Cole / James Dillon	Consigning Office: SYD Date Dispatched: 16/3/05
Attention: JEFF EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment No's No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Cole	16/3/05	4pm	Liz Pitstock	16/3	6.30
Adam Cole				17/3	2pm

Analysis Required

16 MAR 2005

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
E18470	soil	Glass Unpreserved	CBH85 1.1-1.45	16/3/05					
08			CBH86 0.2-0.3						
09			" 0.5-0.95						
10			HA25 0.6-0.7						
11			HA29 0.15-0.2						
12			" 0.6-0.7						
13			HA28 0.0-0.1						
14			" 0.8-0.9						
15			DUP B9						
16			DUP 10						
17	Water	Glass HCl	TS B16/3/05						
18		"	TB B16/3/05						
19			WB B16/3/05						

HOLD AND WAIT FOR INSTRUCTIONS

SEND TO ALS to HOLD FOR INSTRUCTIONS

HOLD AND WAIT FOR INSTRUCTIONS

Special Laboratory Instructions:

Turnaround Required:

Detection Limits:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1019
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	14
Reference/Order	:	E12723/4/30611
Project	:	E12723/4 AREA D
Received Samples	:	16/03/05
Instructions	:	16/03/05
Date Reported	:	18/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1019

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	01/04/05	04/04/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	31/03/05	11/04/05	GTO	094
E1221	TPH (C10-C36)	31/03/05	01/04/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	31/03/05	11/04/05	GTO	094
E5910	Metals by ICP-AES	04/04/05	04/04/05	DLU	093
E5950	Mercury in Soil	04/04/05	04/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	31/03/05	01/04/05	MFA	095
E1290	Volatile Organic Compounds	31/03/05	01/04/05	GTO	094

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184721	E184722	E184723	E184724	E184727
		CBH100	CBH100	CBH100	CBH98	CBH98
	Sample Id	1.0-1.4	1.5-1.95	3.0-3.45	0.0-0.2	2.8-3.35
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	5%	14%	9%	14%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	--	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	--	nd	nd
C15-C28 Fraction	50	nd	nd	--	70	nd
C29-C36 Fraction	50	nd	nd	--	90	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	--	nd	nd
Toluene	1	nd	nd	--	nd	nd
Ethylbenzene	1	nd	nd	--	nd	nd
m&p-Xylene	2	nd	nd	--	nd	nd
o-Xylene	1	nd	nd	--	nd	nd
4-Bromofluorobenzene-SURROGATE	1	83%	84%	--	82%	97%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184728	E184729	E184731		
		CBH99	CBH99	CBH99		
	Sample Id	0.0-0.2	1.4-1.75	4.35-4.7		
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	8%	14%		
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd		
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd		
C15-C28 Fraction	50	nd	nd	nd		
C29-C36 Fraction	50	nd	nd	nd		
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	--		
Toluene	1	--	--	--		
Ethylbenzene	1	--	--	--		
m&p-Xylene	2	--	--	--		
o-Xylene	1	--	--	--		
4-Bromofluorobenzene-SURROGATE	1	--	--	--		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30611

Project : E12723/4 AREA D

Analyte	Lab No	E184721	E184722	E184724	E184727	E184728
		CBH100	CBH100	CBH98	CBH98	CBH99
	Sample Id	1.0-1.4	1.5-1.95	0.0-0.2	2.8-3.35	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	0.7	nd	nd
Chromium	5	nd	nd	15	nd	10
Copper	5	nd	nd	33	nd	24
Nickel	2	4	nd	9	nd	9
Lead	5	nd	13	62	nd	66
Zinc	5	21	35	210	25	110
E5950 Mercury in Soil						
Mercury	0.05	0.10	0.10	0.49	0.11	0.30

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184729	E184731			
		CBH99	CBH99			
	Sample Id	1.4-1.75	4.35-4.7			
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	12	nd			
Zinc	5	32	21			
E5950 Mercury in Soil						
Mercury	0.05	0.13	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30611

Project : E12723/4 AREA D

Analyte	Lab No	E184721	E184722	E184724	E184727	E184728
		CBH100	CBH100	CBH98	CBH98	CBH99
	Sample Id	1.0-1.4	1.5-1.95	0.0-0.2	2.8-3.35	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	99%	84%	89%	87%	91%
Anthracene-d10-SURROGATE	1	102%	86%	89%	89%	88%
p-Terphenyl-D14-SURROGATE	1	98%	86%	86%	89%	90%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184729	E184731			
		CBH99	CBH99			
	Sample Id	1.4-1.75	4.35-4.7			
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	nd	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	nd	nd			
Pyrene	0.5	nd	nd			
Benz(a)anthracene	0.5	nd	nd			
Chrysene	0.5	nd	nd			
Benzo(b) & (k)fluoranthene	1	nd	nd			
Benzo(a)pyrene	0.5	nd	nd			
Indeno(1.2.3-cd)pyrene	0.5	nd	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	nd	nd			
Total USEPA Priority PAHs	0.5	nd	nd			
2-Fluorobiphenyl-SURROGATE	1	90%	88%			
Anthracene-d10-SURROGATE	1	87%	90%			
p-Terphenyl-D14-SURROGATE	1	85%	85%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30611

Project : E12723/4 AREA D

Analyte	Lab No	E184728	E184729	E184731		
		CBH99	CBH99	CBH99		
	Sample Id	0.0-0.2	1.4-1.75	4.35-4.7		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184728	E184729	E184731		
		CBH99	CBH99	CBH99		
	Sample Id	0.0-0.2	1.4-1.75	4.35-4.7		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1019
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30611
Project : E12723/4 AREA D

Analyte	Lab No	E184728	E184729	E184731		
		CBH99	CBH99	CBH99		
	Sample Id	0.0-0.2	1.4-1.75	4.35-4.7		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Trichlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
2-Butanone (MEK)	10	nd	nd	nd		
4-Methyl-2-Pentanone (MIBK)	10	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	100%	99%	99%		
Toluene-D8-SURROGATE	1	99%	100%	100%		
4-Bromofluorobenzene-SURROGATE	1	100%	100%	95%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref: ASET5641/ 8195 / 1 - 3
Your ref: 5E1019
NATA Accreditation No: 14484

4 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of three samples, forwarded by Amdel Laboratories Ltd, on 1 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5641 / 8195 / 1. 5E1019 - BH1/B - E184721.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil and stones.
No asbestos detected.

Sample No. 2. ASET5641 / 8195 / 2. 5E1019 - BH1/E - E184724.
Approx dimensions 4.0 cm x 4.0 cm x 2.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 3. ASET5641 / 8195 / 3. 5E1019 - BH3/B - E184729.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

NATA

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 98 620 960 402
585 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 9899 Fax (03) 9562 9338

Analytical Report

AMDEL ENVIRONMENTAL - SYDNEY
99 Mitchell Road
Cardiff

NSW 2285

Contact	: **BRETT McLENNAM**
Batch Number	: **0503884**
Job Ref	: **5E1019**
Sample(s) Received	: **06/04/2005**
Report No	: **141712**

Methods:

SPOCAS - Acid Nuetralising Capacity (ANCe)#
SPOCAS - Peroxide Oxidisable Sulfur #
SPOCAS - Reacted Calcium #
SPOCAS - Reacted Magnesium #
SPOCAS - Residual Acid Soluble Sulfur #
SPOCAS - Sulfidic Acidity #
SPOCAS Method 23 - TPA, TAA, pH(KCl), pH(ox)#

Attached Results Approved by:

Susan Groth
B.Sc. (Chemistry)
Teamleader - Waters

Anthony Crane
B.App.Sci. (Environmental)
Laboratory Manager

John Levvey
Dip.App.Sci (Chemistry)
Teamleader - Metals

Document may not be reproduced except in full.

**** This is the Final Report which supersedes any reports previously issued relating to the sample(s) included.***
All samples tested as submitted by client.
 # Denotes methods not covered by NATA terms of accreditation

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 66 628 960 402
565 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 5699 Fax (03) 9562 0336

Results

Report No: 141712

	0503884/001
	CBH100/3.0-3.45
	E184723
	Soil
	5/04/05
SUSPENSION POCAS	
Method 23 (SPOCAS) Units: As stated	
pH (KCl) extract #	6.8
pH (ox) Peroxide Extract #	4.5
Total Actual Acidity #	<5.0
mol H+/t	
Total Potential Acidity #	<5.0
mol H+/t	
SUSPENSION POCAS - Peroxide Oxidisable Sulfur	
Method 23 (SPOCAS) Units : %	
Peroxide Oxidisable Sulfur	0.04
, Spos% #	
SUSPENSION POCAS - Sulfidic Acidity	
Method 23 (SPOCAS) Units : mol H+/t	
Total Sulfidic Acidity #	<5
(Acid trail), mol H+/t	
SUSPENSION POCAS- Acid Nuetralising Capacity	
Method 23 (SPOCAS) Units: % CaCO3	
Acid Neutralising #	<0.1
Capacity	
SUSPENSION POCAS- Reacted Calcium	
Method 23 (SPOCAS) Units : %	
Reactive Calcium #	<0.01
Ca_a	
SUSPENSION POCAS- Reacted Magnesium	
Method 23 (SPOCAS) Units: %	
Reactive Magnesium	<0.01
SUSPENSION POCAS- Residual Acid Soluble Sulfur	
Method 23 (SPOCAS) Units %S	
Residual Acid Soluble	<0.01
Sulur #	

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1019

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1019

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1019

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184728)							
C6-C9 Fraction	100	130		128%			
E1221 TPH in Soil (E184721)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		84%			
C29-C36 Fraction							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	92			92%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	460			85%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	10			103%		
Toluene	10	9			93%		
Ethylbenzene	10	9			89%		
m&p-Xylene	20	18			88%		
o-Xylene	10	9			93%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E184721)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E184721)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E184721)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E184721)							
Arsenic	50	49		98%			
Cadmium	50	47		94%			
Chromium	50	51		103%			
Copper	50	46		91%			
Nickel	50	49		97%			
Lead	50	46		92%			
Zinc	50	45		90%			
E5950 Mercury in Soil (E184722)							
Mercury	0.50	0.40		81%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	48			95%		
Cadmium	50	46			92%		
Chromium	50	46			91%		
Copper	50	46			91%		
Nickel	50	46			91%		
Lead	50	44			88%		
Zinc	50	45			90%		
E5950 Mercury in Soil							
Mercury	0.50	0.38			76%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E184721)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	nd	nd						
Nickel	5	4	5	22%				
Lead	nd	nd						
Zinc	20	21	21	4%				
E5950 Mercury in Soil (E184722)								
Mercury	0.10	0.10	0.10	0%				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E184721)							
Naphthalene	5	4.0		79%			
Acenaphthylene	5	4.0		82%			
Acenaphthene	5	4.0		81%			
Fluorene	5	4.2		84%			
Phenanthrene	5	4.0		80%			
Anthracene	5	4.0		81%			
Fluoranthene	5	4.2		83%			
Pyrene	5	4.0		79%			
Benz(a)anthracene	5	4.2		82%			
Chrysene	5	3.8		78%			
Benzo(b) & (k)fluoranthene	10	8		84%			
Benzo(a)pyrene	5	4.2		84%			
Indeno(1.2.3-cd)pyrene	5	4.2		84%			
Dibenz(a.h)anthracene	5	4.2		85%			
Benzo(g.h.i)perylene	5	4.4		87%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			82%		
Acenaphthylene	5	4.4			86%		
Acenaphthene	5	4.2			83%		
Fluorene	5	4.4			87%		
Phenanthrene	5	4.2			83%		
Anthracene	5	4.2			83%		
Fluoranthene	5	4.2			85%		
Pyrene	5	4.2			84%		
Benz(a)anthracene	5	4.2			84%		
Chrysene	5	4.0			81%		
Benzo(b) & (k)fluoranthene	10	9			86%		
Benzo(a)pyrene	5	4.4			87%		
Indeno(1.2.3-cd)pyrene	5	4.4			87%		
Dibenz(a.h)anthracene	5	4.4			89%		
Benzo(g.h.i)perylene	5	4.6			91%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E184721)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	12			117%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	12			117%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	11			108%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	12			117%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1019

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	11			114%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							
2-Butanone (MEK)							
4-Methyl-2-Pentanone (MIBK)							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
2-Butanone (MEK)	10	nd				
4-Methyl-2-Pentanone (MIBK)	10	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 16/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30611
Project:	E12723/4 AREA D
Our Reference Number :	5E1019
Date Received by Amdel :	16/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	8	
Volatile Organic Compounds	E1290	3	Amdel's turnaround times
Benzene,Toluene,Ethylbenzene & Xylene	E1010	4	are typically 3-5 working
TPH C6-C9 by Purge & Trap	E1230	7	days.
TPH (C10-C36)	E1221	7	
Metals by ICP-AES	E5910	7	
Mercury in Soil	E5950	7	
Polycyclic Aromatic Hydrocarbons	E1110	7	
Asbestos	E8110	3	
Acid Sulphate Soils	POCAS	1	
Samples on Hold (Soil)	E7600	5	
Samples on Hold (Water)	E7605	1	
Batch Charge	E7619	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Area	Sample ID	Date Collected	COMMENTS	Analysis							
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
Area D	CBH128 0.0-0.2	15/03/2005		1				1		1	
	CBH128 1.0-1.45	15/03/2005	INCOMPLETE SAMPLE								
	CBH128 2.2-2.65	15/03/2005		1				1			
	CBH134 0.0-0.2	15/03/2005									
	CBH134 1.0-1.4	15/03/2005		1				1		1	
	CBH134 2.1-2.55	15/03/2005									
	CBH134 3.2-3.5	15/03/2005		1				1			
	CBH135 0.0-0.2	15/03/2005									
	CBH135 0.5-0.7	15/03/2005		1				1			
	CBH135 1.5-1.95	15/03/2005		1				1		1	
	CBH135 3.5-3.7	15/03/2005		1				1			
	CBH136 0.0-0.2	15/03/2005		1				1	1	1	
	CBH136 1.0-1.4	15/03/2005		1				1			
	CBH137 0.0-0.2	15/03/2005		1				1		1	
	CBH137 1.0-1.4	15/03/2005		1				1			
	CBH138 0.0-0.2	15/03/2005									
	CBH138 1.2-1.7	15/03/2005		1				1		1	
	CBH138 2.0-2.2	15/03/2005		1				1			
	CBH139 0.0-0.2	15/03/2005		1				1	1	1	
	CBH139 1.7-1.9	15/03/2005									
	CBH139 2.0-2.5	15/03/2005					1	1			
	DUPD5	15/03/2005		1				1		1	
	ALSD5	15/03/2005		1				1		1	
	TS050310.11	15/03/2005									
EIB471	CBH100 0.0-0.2	16/03/2005		1				1		1	
21	CBH100 1.0-1.4	16/03/2005		1				1			1
22	CBH100 1.5-1.95	16/03/2005									
23	CBH100 3.0-3.45	16/03/2005		1				1		1	
24	CBH98 0.0-0.2	16/03/2005									
25	CBH98 1.1-1.5	16/03/2005									
26	CBH98 2.0-2.4	16/03/2005									
27	CBH98 2.8-2.35	16/03/2005	CHANGE NAME TO CBH98 2.8-3.35								
28	CBH99 0.0-0.2	16/03/2005		1				1			
29	CBH99 1.2-1.75	16/03/2005	CHANGE NAME TO CBH99 1.4-1.75				1	1			
30	CBH99 2.5-2.8	16/03/2005					1	1		1	
31	CBH99 4.55-4.7	16/03/2005									
							1	1			

RECEIVED
24 MAR 2005
5E1019
24/3/05

				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
E184732	WBD16/4	16/03/2005	Amber, 3 vials								
33	DUPD6	16/03/2005									
	ALSD6	16/03/2005									
	CBH140 0.0-0.2	17/03/2005		1				1	1	1	
	CBH140 0.5-0.95	17/03/2005									
	CBH140 1.4-1.5	17/03/2005		1				1			
	CBH141 0.0-0.2	17/03/2005									
	CBH141 0.5-0.95	17/03/2005					1	1		1	
	CBH141 1.3-1.75	17/03/2005					1	1			
	CBH142 0.0-0.2	17/03/2005		1				1		1	
	CBH142 0.5-0.7	17/03/2005		1				1			
	CBH143 0.0-0.2	17/03/2005									
	CBH143 0.5-0.6	17/03/2005		1				1		1	
	CBH143 1.7-2.15	17/03/2005		1				1			
	CBH144 0.0-0.2	17/03/2005									
	CBH144 0.5-0.6	17/03/2005		1				1		1	
	CBH144 1.5-1.95	17/03/2005		1				1			
	CBH 9.2-9.65	17/03/2005	CHANGE NAME TO CBH99 9.2-9.65								
	DUP3D	17/03/2005									
	DUP4D	17/03/2005									
	TS D 17/3/05	17/03/2005	VIAL								
	TB D 17/3/05	17/03/2005									
	WB D 17/3/05	17/03/2005									
	CBH101 0.0-0.2	18/03/2005									
	CBH101 1.0-1.45	18/03/2005		1				1		1	
	CBH101 1.5-1.95	18/03/2005	CHANGE NAME TO CBH101 1.95-2.4	1				1			
	CBH103 0.0-0.2	18/03/2005									
	CBH103 1.1-1.45	18/03/2005		1				1	1	1	
	CBH103 2.2-2.45	18/03/2005		1				1			
	CBH105 0.0-0.2	18/03/2005						1			
	CBH105 1.2-1.65	18/03/2005		1				1		1	
	CBH105 2.4-2.85	18/03/2005		1				1			
	CBH105 4.0-4.45	18/03/2005									1

RECEIVED
24 MAR 2005
55109

24/3/05

No: 30611

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CHRIS WESTACOTT	Consigning Office: SYDNEY Date Dispatched:
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	16/3/05	5pm	Liz Pitstock	16/3 17/3	6.30 2pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals:	Sample Condition on Receipt
E184720	soil	JAR ICE	CBH100 @ 0.0-0.2	16/3/05					
21			" 1.0-1.4						
22			" 1.5-1.95						
23			" 3.0-3.45						
24			CBH98 0.0-0.2						
25			" 1.1-1.5						
26			" 2.0-2.4						
27			" 2.8-2.35						
28			CBH99 0.0-0.2						
29			" 1.2-1.75						
30			" 2.5-2.6						
31			" 4.25-4.7						
32		Amber Vial	WBD1614						
~~33~~		Vial	WBD1614						
~~34~~		Vial	WBD1614 x2						
33 ~~35~~		Jar + ice	DUP06						
~~36~~		"	ALS D6						

HOLD FOR FURTHER INSTRUCTION

→ FORWARD TO ALS

16 MAR 2005 SE1019

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1051
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	10
Reference/Order	:	E12723/4/27329
Project	:	E12723/4 AREA B
Received Samples	:	17/03/05
Instructions	:	22/03/05
Date Reported	:	13/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1051

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	Moisture (%w/w)	24/03/05	24/03/05	ZSI 096
E1230	TPH C6-C9 by Purge & Trap	30/03/05	11/04/05	JMC 094
E1221	TPH (C10-C36)	24/03/05	25/03/05	MCM 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	30/03/05	11/04/05	JMC 094
E5910	Metals by ICP-AES	31/03/05	31/03/05	DLU 093
E5950	Mercury in Soil	31/03/05	31/03/05	DLU 093
E1110	Polycyclic Aromatic Hydrocarbons	24/03/05	29/03/05	MFA 095
E1290	Volatile Organic Compounds	24/03/05	24/03/05	MCM 094
E1080	Organochlorine Pesticides	24/03/05	01/04/05	MFA 095
E1090	Organophosphorus Pesticides	24/03/05	01/04/05	MFA 095
E0230	TPH C6-C9 by purge & trap	02/04/05	02/04/05	MCM 094
E0221F	TPH (C10-C36)	01/04/05	02/04/05	MCM 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	02/04/05	02/04/05	MCM 094
E4870	Dissolved Metals by ICP-MS	30/03/05	30/03/05	DLU 093
E4850	Mercury	30/03/05	30/03/05	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA 095
E0080	Organochlorine Pesticides	01/04/05	01/04/05	MFA 095
E0090	Organophosphorus Pesticides	01/04/05	01/04/05	MFA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049	E185051	E185052	E185053
		CBH90	CBH90	CBH92	CBH92	CBH93
	Sample Id	0.0-0.2	0.5-0.95	0.0-0.1	0.15-.25	0.0-0.05
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	14%	12%	10%	7%	22%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	--	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	10	--	nd
C15-C28 Fraction	50	nd	nd	nd	--	nd
C29-C36 Fraction	50	nd	nd	nd	--	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	--	--	nd	--	nd
Toluene	1	--	--	nd	--	nd
Ethylbenzene	1	--	--	nd	--	nd
m&p-Xylene	2	--	--	nd	--	nd
o-Xylene	1	--	--	nd	--	nd
4-Bromofluorobenzene-SURROGATE	1	--	--	103%	--	93%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No / Sample Id / PQL	E185054 DUPB11 17.3.05				
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	13%				
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	10				
C15-C28 Fraction	50	70				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	108%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049	E185051	E185052	E185053
		CBH90	CBH90	CBH92	CBH92	CBH93
	Sample Id	0.0-0.2	0.5-0.95	0.0-0.1	0.15-.25	0.0-0.05
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	6	nd	5
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	nd
Copper	5	8	nd	9	nd	7
Nickel	2	3	nd	3	nd	nd
Lead	5	9	6	5	6	nd
Zinc	5	17	15	24	17	6
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No	E185054				
		DUPB11				
	Sample Id	17.3.05				
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	7				
Nickel	2	3				
Lead	5	nd				
Zinc	5	6				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049	E185051	E185053	E185054
		CBH90	CBH90	CBH92	CBH93	DUPB11
	Sample Id	0.0-0.2	0.5-0.95	0.0-0.1	0.0-0.05	17.3.05
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	0.5	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	0.5	nd	nd
2-Fluorobiphenyl-SURROGATE	1	130%	100%	82%	92%	79%
Anthracene-d10-SURROGATE	1	119%	106%	74%	85%	70%
p-Terphenyl-D14-SURROGATE	1	130%	107%	83%	88%	76%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049			
		CBH90	CBH90			
	Sample Id	0.0-0.2	0.5-0.95			
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd			
Bromobenzene	1	nd	nd			
Bromochloromethane	1	nd	nd			
Bromodichloromethane	1	nd	nd			
Bromoform	1	nd	nd			
Bromomethane	1	nd	nd			
n-Butylbenzene	1	nd	nd			
sec-Butylbenzene	1	nd	nd			
tert-Butylbenzene	1	nd	nd			
Carbon tetrachloride	1	nd	nd			
Chlorobenzene	1	nd	nd			
Chloroethane	1	nd	nd			
Chloroform	1	nd	nd			
Chloromethane	1	nd	nd			
2-Chlorotoluene	1	nd	nd			
4-Chlorotoluene	1	nd	nd			
Dibromochloromethane	1	nd	nd			
1.2-Dibromo-3-chloropropane	1	nd	nd			
1.2-Dibromoethane (EDB)	1	nd	nd			
Dibromomethane	1	nd	nd			
1.2-Dichlorobenzene	1	nd	nd			
1.3-Dichlorobenzene	1	nd	nd			
1.4-Dichlorobenzene	1	nd	nd			
Dichlorodifluoromethane	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049			
		CBH90	CBH90			
	Sample Id	0.0-0.2	0.5-0.95			
	PQL					
1.1-Dichloroethene	1	nd	nd			
1.2-Dichloroethane	1	nd	nd			
1.1-Dichloroethane	1	nd	nd			
cis-1.2-Dichloroethene	1	nd	nd			
trans-1.2-Dichloroethene	1	nd	nd			
1.2-Dichloropropane	1	nd	nd			
1.3-Dichloropropane	1	nd	nd			
2.2-Dichloropropane	1	nd	nd			
1.1-Dichloropropylene	1	nd	nd			
cis-1.3-Dichloropropylene	1	nd	nd			
trans-1.3-Dichloropropylene	1	nd	nd			
Ethylbenzene	1	nd	nd			
Hexachlorobutadiene	1	nd	nd			
Isopropylbenzene	1	nd	nd			
p-Isopropyltoluene	1	nd	nd			
Methylene chloride	1	nd	nd			
Naphthalene	1	nd	nd			
n-Propylbenzene	1	nd	nd			
Styrene	1	nd	nd			
1.1.1.2-Tetrachloroethane	1	nd	nd			
1.1.2.2-Tetrachloroethane	1	nd	nd			
Tetrachloroethene	1	nd	nd			
Toluene	1	nd	nd			
1.2.3-Trichlorobenzene	1	nd	nd			
1.2.4-Trichlorobenzene	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185049			
		CBH90	CBH90			
	Sample Id	0.0-0.2	0.5-0.95			
	PQL					
1.1.1-Trichloroethane	1	nd	nd			
1.1.2-Trichloroethane	1	nd	nd			
Trichloroethene	1	nd	nd			
Trichlorofluoromethane	1	nd	nd			
1.2.3-Trichloropropane	1	nd	nd			
1.2.4-Trimethylbenzene	1	nd	nd			
1.3.5-Trimethylbenzene	1	nd	nd			
Vinyl chloride	1	nd	nd			
ortho-Xylene	1	nd	nd			
meta- & para-Xylene	2	nd	nd			
Pentafluorobenzene-SURROGATE	1	97%	96%			
Toluene-D8-SURROGATE	1	99%	100%			
4-Bromofluorobenzene-SURROGATE	1	95%	95%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

APPENDIX F1

QA/QC DATA VALIDATION REPORTS

PHASE 1 INVESTIGATION NOVEMBER 2004

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: Amdel 4E1903A – Area D Hand Augers

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 8; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	N/A
Inter-Laboratory Field Duplicates	N/A	N/A
Trip Blanks	1	N/A
Wash Blanks	1	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	1	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Inter-laboratory duplicates were collected as part of the greater sampling program. See other batches.
RPD for nickel (59%) exceeded the control limit. Given that the concentrations of nickel detected are marginal (6mg/kg and 11mg/kg) in both primary and duplicate samples and the landuse criteria is 60mg/kg for phytotoxicity, and the other metals RPDs were within control limits, this nickel exceedence is not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

COMMENTS:

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	VOCs	Metals	OC/OP
Laboratory Blanks/Reagent Blanks	2	2	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	-	-	1	-
Laboratory Control Samples / Duplicates	2	2	1	1	2
Laboratory Duplicates	2	-	-	-	-
Surrogates	1	3	3	-	2

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

Job Number: E12723/3 Laboratory batch: Amdel 4E1903A – Area D Hand Augers

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

QA / QC Report Prepared by: **Adam Gillis**

QA / QC Report Reviewed by:

(Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE 4E1903A
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA D (QCQA)
All results in mg/kg

Sample ID	HA16	DUP2	RPD %
Geological Origin	Silty Sand		
Date of Sampling	12-Oct-04		
Depth (m)	0.0-0.1		
HEAVY METALS			
Arsenic	<5	<5	ND
Cadmium	<0.5	<0.5	ND
Chromium - total	5	8	46
Copper	20	17	16
Nickel	6	11	59
Lead	45	39	14
Zinc	66	71	7
Mercury	0.09	0.06	40
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction	<5	<5	ND
C10 - C14 Fraction	<10	<10	ND
C15 - C28 Fraction	<50	<50	ND
C29 - C36 Fraction	<50	<50	ND
BTEX			
Benzene	<0.2	<0.2	ND
Toluene	<1	<1	ND
Ethylbenzene	<1	<1	ND
Total Xylene	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND
Phenanthrene	<0.5	0.6	ND
Anthracene	<0.5	<0.5	ND
Fluoranthene	0.7	1	35
Pyrene	0.8	1.2	40
Benzo(a)anthracene	<0.5	0.6	NC
Chrysene	<0.5	0.5	NC
Benzo(b)&(k)fluorant	<1	1	NC
Benzo(a)pyrene	0.5	0.6	18
Indeno(123-cd)pyrene	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND
VOLATILE ORGANIC COMPOUNDS			
	<0.5	<0.5	ND
ORGANOCHLORINE PESTICIDES			
	<0.1	<0.1	ND
ORGANOPHOSPHORUS PESTICIDES			
	<0.5	<0.5	ND
ASBESTOS	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: Amdel 4E2050 – Area B Soils

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 14; Water: 0

2. Number of Days of Sampling: — Soil: 2; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	N/A
Inter-Laboratory Field Duplicates	N/A	N/A
Trip Blanks	0	N/A
Wash Blanks	0	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Inter-laboratory duplicates were collected as part of the greater sampling program.
RPDs for zinc in duplicate pair CBH28 0.15-0.25 / DUP7 was in excess of the control. Also lead, zinc and fluranthene in duplicate pair CBH30 1.0-1.3 / DUP8 was in excess of the control. Given that the concentrations detected are marginal in both primary and duplicate samples and the respective landuse criteria are an order of magnitude higher, these exceedences are not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks, trip blanks and trip spikes were collected as part of the overall sampling program. See Amdel Batch 4E2049 and 4E2107.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

See above. QA/QC of wash blanks, trip spikes and trip blanks are reported in separate QA reports.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	VOCs	Metals	OC/OP
Laboratory Blanks/Reagent Blanks	1	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	-	1	-
Laboratory Control Samples / Duplicates	1	1	1	1	2
Laboratory Duplicates	1	1	-	1	-
Surrogates	1	3	3	-	2

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

.....

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

Job Number: E12723/3 Laboratory batch: Amdel 4E2050 – Area B Soils

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

Some RPDs were in excess of the control limit. Given that the concentrations detected are marginal in both primary and duplicate samples and the respective landuse criteria are an order of magnitude higher than the given concentration, these exceedences are not considered to affect the usability of the data.

QA / QC Report Prepared by: **Adam Gillis**

QA / QC Report Reviewed by:

(Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE 4E2050
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA B (QCQA)
All results in mg/kg

Sample ID	CBH28	DUP7	RPD %	CBH30	DUP8	RPD %
Geological Origin	Fill			Clayey Sand		
Date of Sampling	28-Oct-04			28-Oct-04		
Depth (m)	0.15-0.25			1.0-1.3		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<0.5	ND
Chromium - total	<5	<5	ND	<5	12	NC
Copper	8	7	13	<5	15	NC
Nickel	<2	<2	ND	<2	13	NC
Lead	110	54	68	14	30	73
Zinc	92	67	31	43	74	53
Mercury	<0.05	<0.05	ND	<0.05	<0.05	ND
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<5	ND
C10 - C14 Fraction	<10	<10	ND	<10	<10	ND
C15 - C28 Fraction	<50	<50	ND	<50	<50	ND
C29 - C36 Fraction	<50	<50	ND	<50	<50	ND
Total C10-C36	ND	ND	ND	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<1	ND
Ethylbenzene	<1	<1	ND	<1	<1	ND
Total Xylene	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	0.6	NC
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND	0.9	0.5	57
Pyrene	<0.5	<0.5	ND	1	0.6	50
Benzo(a)anthracene	<0.5	<0.5	ND	0.6	<0.5	NC
Chrysene	<0.5	<0.5	ND	0.7	<0.5	ND
Benzo(b)&(k)fluorant	<1	<1	ND	1	<1	NC
Benzo(a)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND	<0.5	<0.5	ND
ORGANOCHLORINE PESTICIDES						
	<0.1	<0.1	ND	-	-	-
ORGANOPHOSPHORUS PESTICIDES						
	<0.5	<0.5	ND	-	-	-
ASBESTOS	ND	ND	ND	-	-	-

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: Amdel 4E2052 – Area D Soil

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 23; Water: 0

2. Number of Days of Sampling: — Soil: 3; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	4	N/A
Inter-Laboratory Field Duplicates	N/A	N/A
Trip Blanks	0	N/A
Wash Blanks	0	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Inter-laboratory duplicates were collected as part of the greater sampling program.
RPDs for mercury in duplicate pair CBH10 0.0 / DUP1 was in excess of the control limit. Also, RPDs for zinc and lead in duplicate pair CBH24 0.0 / DUP6 was in excess of the control limits. Given that the concentrations detected are marginal in both primary and duplicate samples and the respective landuse criteria are an order of magnitude higher than the concentration detected, this exceedences is not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks, trip blanks and trip spikes were collected as part of the overall sampling program. See Amdel Batch 4E2049 and 4E2107.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

See above. QA/QC of wash blanks, trip spikes and trip blanks are reported in separate QA reports.

Field QA / QC was:

- ☐ **Satisfactory**
- ☒ **Partially Satisfactory**
- ☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	VOCs	Metals	OC/OP
Laboratory Blanks/Reagent Blanks	2	2	1	2	2
Matrix Spikes/Matrix Spike Duplicates	2	2	1	2	2
Laboratory Control Samples / Duplicates	2	2	1	2	2
Laboratory Duplicates	2	3	1	3	2
Surrogates	1	3	3	-	2

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

Job Number: E12723/3 Laboratory batch: Amdel 4E2052 – Area D Soil

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

The RPDs in two duplicate pairs were in excess of the control limits. Given that the concentration detected is marginal in both primary and duplicate samples and the respective landuse criteria is an order of magnitude higher than the given concentration, this exceedence is not considered to affect the usability of the data.

QA / QC Report Prepared by: **Adam Gillis**

QA / QC Report Reviewed by: _____

(Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE - 4E2052
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA D (QCQA)
All results in mg/kg

Sample ID	CBH10	DUP1	RPD %	CBH13	DUP2	RPD %	CBH22	DUP5	RPD %	CBH24	DUP6	RPD %
Geological Origin	Fill			Fill			Fill			Fill		
Date of Sampling	25-Oct-04			26-Oct-04			27-Oct-04			27-Oct-04		
Depth (m)	0.0-0.1			0.0-0.1			0.0-0.1			0.0-0.1		
HEAVY METALS												
Arsenic	<5	<5	ND	<5	<5	ND	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Chromium - total	11	13	17	<5	<5	ND	<5	<5	ND	<5	<5	ND
Copper	18	17	6	<5	<5	ND	31	29	7	<5	<5	ND
Nickel	6	4	40	7	7	0	8	5	46	<2	<2	ND
Lead	85	94	10	11	12	9	24	22	9	6	11	59
Zinc	86	110	24	14	14	0	40	36	11	24	42	55
Mercury	0.18	0.42	80	<0.05	<0.05	ND	0.38	0.27	34	<0.05	<0.05	ND
TOTAL PETROLEUM HYDROCARBONS												
C6 - C9 Fraction	<5	<5	ND	<5	<5	ND	<5	<5	ND	<5	<5	ND
C10 - C14 Fraction	<10	<10	ND	20	20	0	<10	<10	ND	<10	<10	ND
C15 - C28 Fraction	70	60	15	70	80	13	50	50	0	<50	<50	ND
C29 - C36 Fraction	80	90	12	<50	<50	ND	90	60	40	<50	<50	ND
Total C10-C36	150	150	0	90	100	11	140	110	24	ND	ND	ND
BTEX												
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<1	ND	<1	<1	ND	<1	<1	ND
Ethylbenzene	<1	<1	ND	<1	<1	ND	<1	<1	ND	<1	<1	ND
Total Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS												
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	<0.5	ND	0.6	1	50	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	1	1	0	<0.5	<0.5	ND	1.6	3	48	<0.5	<0.5	ND
Pyrene	1.2	1	18	<0.5	<0.5	ND	2	3	33	<0.5	<0.5	ND
Benzo(a)anthracene	0.6	0.6	0	<0.5	<0.5	ND	1	1	18	<0.5	<0.5	ND
Chrysene	0.6	0.6	0	<0.5	<0.5	ND	0.9	1	29	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	1	1	0	<1	<1	ND	2	3	40	<1	<1	ND
Benzo(a)pyrene	0.7	0.7	0	<0.5	<0.5	ND	1.2	1	15	<0.5	<0.5	ND
Indeno(123-cd)pyrene	0.6	0.6	0	<0.5	<0.5	ND	1.2	1	0	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	0.5	<0.5	ND	<0.5	<0.5	ND	0.9	1	11	<0.5	<0.5	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: Amdel 4E2106 – Areas B and D Soil

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 9; Water: 0

2. Number of Days of Sampling: — Soil: 3; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	N/A
Inter-Laboratory Field Duplicates	N/A	N/A
Trip Blanks	0	N/A
Wash Blanks	0	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Inter-laboratory duplicates were collected as part of the greater sampling program.
RPDs for zinc in duplicate pair CBH62 0.3 / DUP13 was in excess of the control limit. Given that the concentrations detected are marginal in both primary and duplicate samples and the respective landuse criteria are an order of magnitude higher than the concentration detected, this exceedences is not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks, trip blanks and trip spikes were collected as part of the overall sampling program. See Amdel Batch 4E2049 and 4E2107.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

See above. QA/QC of wash blanks, trip spikes and trip blanks are reported in separate QA reports.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	VOCs	Metals	OC/OP
Laboratory Blanks/Reagent Blanks	1	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1	-
Laboratory Control Samples / Duplicates	1	1	1	1	2
Laboratory Duplicates	1	2	2	2	-
Surrogates	1	3	3	-	2

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

The RPDs in one duplicate pair was in excess of the control limit. Given that the concentration detected is marginal in both primary and duplicate samples and the respective landuse criteria is an order of magnitude higher than the given concentration, this exceedence is not considered to affect the usability of the data.

QA / QC Report Prepared by: **Adam Gillis**

QA / QC Report Reviewed by:

(Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE 4E2106
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA B (QCQA)
All results in mg/kg

Sample ID	CBH62	DUP13	RPD %
Geological Origin		AMDEL	
Date of Sampling	1-Nov-04		
Depth (m)	0.3-0.5		
HEAVY METALS			
Arsenic	<5	<5	ND
Cadmium	<0.5	<0.5	ND
Chromium - total	<5	<5	ND
Copper	<5	<5	ND
Nickel	<2	<2	ND
Lead	<5	<5	ND
Zinc	9	30	108
Mercury	*<0.05*	*<0.05*	ND
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction	<5	<5	ND
C10 - C14 Fraction	<10	<10	ND
C15 - C28 Fraction	<50	<50	ND
C29 - C36 Fraction	<50	<50	ND
Total C10-C36	ND	ND	ND
BTEX			
Benzene	<0.2	<0.2	ND
Toluene	<1	<1	ND
Ethylbenzene	<1	<1	ND
Total Xylene	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<1	ND
Benzo(a)pyrene	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND
Total PAHs	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS			
	<0.5	<0.5	ND
ASBESTOS	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

E12723/3
19/05/2005

TABLE 4E2106
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA B (QCQA)
All results in mg/kg

Sample ID	CBH62	DUP13	DUP13	RPD %
Geological Origin	PRIMARY	ALS	AMDEL	AMDEL
Date of Sampling	1-Nov-04			vs
Depth (m)	0.3-0.5			ALS
HEAVY METALS				
Arsenic	<5	2	<5	ND
Cadmium	<0.5	<1	<0.5	ND
Chromium - total	<5	<1	<5	ND
Copper	<5	<1	<5	ND
Nickel	<2	<1	<2	ND
Lead	<5	3	<5	ND
Zinc	9	11	30	93
Mercury	<0.05	<0.1	<0.05	ND
TOTAL PETROLEUM HYDROCARBONS				
C6 - C9 Fraction	<5	<2	<5	ND
C10 - C14 Fraction	<10	<50	<10	ND
C15 - C28 Fraction	<50	<100	<50	ND
C29 - C36 Fraction	<50	<100	<50	ND
Total C10-C36	ND	ND	ND	ND
BTEX				
Benzene	<0.2	<0.2	<0.2	ND
Toluene	<1	<0.2	<1	ND
Ethylbenzene	<1	<0.2	<1	ND
Total Xylene	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS				
Naphthalene	<0.5	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<1	<1	ND
Benzo(a)pyrene	<0.5	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	<0.5	ND
Total PAHs	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS				
	<0.5	<0.5	<0.5	ND
ASBESTOS	ND	ND	ND	ND

NOTES:

	RPD exceeds contol limit of 50%
ND	Both primary and duplicate samples were not detected
NC	RPD not calculated as primary sample was not detected, while the duplicate sample produced values above detection limits, or vice versa

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: Amdel 4E2108 Rev1 – Area D Groundwater

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 0; Water: 5

2. Number of Days of Sampling: — Soil: 0; Water: 1

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	N/A
Inter-Laboratory Field Duplicates	0	N/A
Trip Blanks	1	N/A
Wash Blanks	N/A	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	1	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	N/A	N/A
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks not required as dedicated sampling equipment was used.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	VOCs	Metals
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1		1
Laboratory Control Samples / Duplicates	1	1	1	1
Laboratory Duplicates	1	1	1	1
Surrogates				

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

.....

.....

.....

QA / QC Report Prepared by: **Adam Gillis**

QA / QC Report Reviewed by: _____

(Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE 4E2108 Rev1
SUMMARY OF %RPD RESULTS - GROUNDWATER
STAGE 2 ESA - AREA D (QCQA)
All results in ug/L

Sample ID	MW1	DUP1	RPD %
Geological Origin	Groundwater		
Date of Sampling	5-Nov-04		
HEAVY METALS			
Arsenic	0.005	<0.001	NC
Cadmium	<0.0001	<0.0001	ND
Chromium - total	<0.001	<0.001	ND
Copper	0.001	<0.001	NC
Nickel	0.003	<0.001	NC
Lead	<0.001	<0.001	ND
Zinc	0.117	<0.002	NC
Mercury	<0.001	<0.001	ND
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction	<20	<20	ND
C10 - C14 Fraction	<20	<20	ND
C15 - C28 Fraction	<100	<100	ND
C29 - C36 Fraction	<100	<100	ND
Total C10-C36	ND	ND	ND
BTEX			
Benzene	<0.5	<0.5	ND
Toluene	2	2	0
Ethylbenzene	<1	<1	ND
Total Xylene	<2	<2	ND
	<1	<1	ND
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<1	<1	ND
Acenaphthylene	<1	<1	ND
Acenaphthene	<1	<1	ND
Fluorene	<1	<1	ND
Phenanthrene	<1	<1	ND
Anthracene	<1	<1	ND
Fluoranthene	<1	<1	ND
Pyrene	<1	<1	ND
Benzo(a)anthracene	<1	<1	ND
Chrysene	<1	<1	ND
Benzo(b)&(k)fluorant	<2	<2	ND
Benzo(a)pyrene	<1	<1	ND
Indeno(123-cd)pyrene	<1	<1	ND
Dibenz(ah)anthracene	<1	<1	ND
Benzo(ghi)perylene	<1	<1	ND
Total PAHs	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS			
	<5	<5	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected, while the duplicate sample produced values above detection limits, or vice versa

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: ALS Environmental ES51528

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

THIS SAMPLE BATCH REPRESENTS INTER LABORATORY FIELD DUPLICATES OF PRIMARY SAMPLES COLLECTED AND ANALYSED AS PART OF ANOTHER BATCH.

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)*
   Soil: 0
   Water: 0

2. Number of Days of Sampling:
   Soil: 1
   Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	N/A
Inter-Laboratory Field Duplicates	5	N/A
Trip Blanks	0	N/A
Wash Blanks	0	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	N/A	N/A
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☐	☒
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Intra-laboratory duplicates were collected as part of the greater sampling program.
RPDs for Total PAHs in DUP8 (Amdel vs ALS) was in excess of the control limit. RPDs for Zinc and numerous PAHs in DUP5 (Amdel vs ALS) were also in excess of the control limit. It is considered likely that poor reproducibility of DUP5 could be attributable to poor homogenisation. The concentrations detected are marginal in both duplicate samples and well below the respective landuse criteria. This exceedences is not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Intra-laboratory trip and wash blanks were collected and analysed as part of the greater sampling procedure.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Intra-laboratory trip spikes were collected and analysed as part of the greater sampling procedure.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	OCP	Metals
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes (MS) /Matrix Spike Duplicates (MSD)	2	2	2	1
Laboratory Duplicates	0	0	0	0
Laboratory Control Samples (LCS) / Duplicates (SCS/DCS)	2	2	2	1
Surrogates	3	3	1	0

	Yes	No (Comment below)
2. Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☐	☒
4. Were the RPDs of the laboratory duplicates within control limits?	N/A	N/A
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

Spike recovery for Heptachlor was in excess of the control limit (68.3%). Given that the concentrations detected are marginal and the respective landuse criteria are an order of magnitude higher than the concentration detected, this exceedences is not considered to affect the usability of the data.

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

QA / QC Report Prepared by: **Aaron Rastall**

QA / QC Report Reviewed by: (Andrew Barwick - Project Manager)

E12723/3
19/05/2005

TABLE ES51528
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - ALS DUPLICATE SAMPLES
All results in mg/kg

Sample ID	CBH43	DUP10	RPD %	CBH30	DUP8	RPD %	CBH13	DUP2	RPD %
Area		AREA A			AREA B			AREA D	
Geological Origin	Clayey Sand			Fill			Fill		
Date of Sampling	29-Oct-04			28-Oct-04			26-Oct-04		
Depth (m)	0.0-0.1			0.15-0.25			0.0-0.1		
HEAVY METALS									
Arsenic	<5	<1	ND	<5	1	NC	<5	2	NC
Cadmium	<0.5	<1	ND	<0.5	<1	ND	<0.5	<1	ND
Chromium - total	<5	<1	ND	9	15	50	<5	4	NC
Copper	<5	<1	ND	17	14	19	<5	4	NC
Nickel	<2	<1	ND	14	16	13	7	7	0
Lead	8	6	29	21	23	9	11	11	0
Zinc	22	19	15	66	66	0	14	15	7
Mercury	<0.05	<0.1	ND	<0.05	<0.1	ND	<0.05	<0.1	ND
TOTAL PETROLEUM HYDROCARBONS									
C6 - C9 Fraction	<5	<2	ND	<5	<2	ND	<5	<2	ND
C10 - C14 Fraction	<10	<50	ND	<10	<50	ND	20	<50	ND
C15 - C28 Fraction	<50	<100	ND	50	<100	ND	70	<100	ND
C29 - C36 Fraction	<50	<100	ND	<50	<100	ND	<50	<100	ND
Total C10-C36	ND	ND	ND	50	ND	ND	90	ND	ND
BTEX									
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<0.2	ND	<1	<0.2	ND	<1	<0.2	ND
Ethylbenzene	<1	<0.2	ND	<1	<0.2	ND	<1	<0.2	ND
Total Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS									
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	0.7	0.5	33	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND	0.6	<0.5	NC	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	ND	0.7	<0.5	NC	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<0.5	ND	<1	<0.5	ND	<1	<0.5	ND
Benzo(a)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Total PAHs	ND	ND	ND	2	0.5	120	ND	ND	ND
ORGANOCHLORINE PESTICIDES									
	ND	ND	ND	-	-	-	-	-	-
ASBESTOS	ND	ND	ND	-	-	-	-	-	-

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

E12723/3
19/05/2005

TABLE ES51528
SUMMARY OF %RPD RE
STAGE 2 ESA - ALS DUP
All results in mg/kg

Sample ID	CBH22	DUP5	RPD %	CBH24	DUP6	RPD %
Area	AREA D			AREA D		
Geological Origin	Fill			Fill		
Date of Sampling	27-Oct-04			27-Oct-04		
Depth (m)	0.0-0.1			0.0-0.1		
HEAVY METALS						
Arsenic	<5	2	NC	<5	1	NC
Cadmium	<0.5	<1	ND	<0.5	<1	ND
Chromium - total	<5	5	NC	<5	1	NC
Copper	31	22	34	<5	3	NC
Nickel	8	7	13	<2	<1	ND
Lead	24	26	8	6	9	40
Zinc	40	46	14	24	52	74
Mercury	0.38	0.50	27	<0.05	<0.1	ND
TOTAL PETROLEUM HYDROCARB						
C6 - C9 Fraction	<5	<2	ND	<5	<2	ND
C10 - C14 Fraction	<10	<50	ND	<10	<50	ND
C15 - C28 Fraction	50	<100	ND	<50	<100	ND
C29 - C36 Fraction	90	<100	ND	<50	<100	ND
Total C10-C36	140	ND	ND	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<0.2	ND	<1	<0.2	ND
Ethylbenzene	<1	<0.2	ND	<1	<0.2	ND
Total Xylene	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROC						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	0.6	<0.5	NC	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	1.6	1.1	37	<0.5	<0.5	ND
Pyrene	2	1.3	42	<0.5	<0.5	ND
Benzo(a)anthracene	1.0	0.7	35	<0.5	<0.5	ND
Chrysene	0.9	0.7	25	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	2	<1.5	NC	<1	<0.5	ND
Benzo(a)pyrene	1.2	0.8	40	<0.5	<0.5	ND
Indeno(123-cd)pyrene	1.2	<0.5	NC	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	0.9	0.6	40	<0.5	<0.5	ND
Total PAHs	11.4	5	76	ND	ND	ND
ORGANOCHLORINE PESTICIDES						
	-	-	-	-	-	-
ASBESTOS	-	-	-	-	-	-

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected, while the duplicate sample produced values above detection limits, or vice versa

E12723/3
19/05/2005

TABLE ES21528
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - ALS DUPLICATE SAMPLES
All results in mg/kg

Sample ID	DUP10	DUP10	RPD %	DUP8	DUP8	RPD %	DUP2	DUP2	RPD %
Area	AREA A			AREA B			AREA D		
Geological Origin	Amdel	ALS		Amdel	ALS		Amdel	ALS	
Date of Sampling									
Depth (m)									
HEAVY METALS									
Arsenic	<5	<1	ND	<5	1	ND	<5	2	ND
Cadmium	<0.5	<1	ND	<0.5	<1	ND	<0.5	<1	ND
Chromium - total	<5	<1	ND	12	15	22	<5	4	NC
Copper	5	<1	ND	15	14	7	<5	4	NC
Nickel	<2	<1	ND	13	16	21	7	7	0
Lead	5	6	18	30	23	26	12	11	9
Zinc	19	19	0	74	66	11	14	15	7
Mercury	<0.05	<0.1	ND	<0.05	<0.1	ND	<0.05	<0.1	ND
TOTAL PETROLEUM HYDROCARBONS									
C6 - C9 Fraction	<5	<2	ND	<5	<2	ND	<5	<2	ND
C10 - C14 Fraction	<10	<50	ND	<10	<50	ND	20	<50	ND
C15 - C28 Fraction	<50	<100	ND	<50	<100	ND	80	<100	ND
C29 - C36 Fraction	<50	<100	ND	<50	<100	ND	<50	<100	ND
Total C10-C36	ND	ND	ND	ND	ND	ND	100	ND	ND
BTEX									
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<0.2	ND	<1	<0.2	ND	<1	<0.2	ND
Ethylbenzene	<1	<0.2	ND	<1	<0.2	ND	<1	<0.2	ND
Total Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS									
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	0.6	0.5	18	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND	0.5	<0.5	NC	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	ND	0.6	<0.5	NC	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<0.5	ND	<1	<0.5	ND	<1	<0.5	ND
Benzo(a)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Total PAHs	ND	ND	ND	1.7	0.5	109	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

E12723/3
19/05/2005

TABLE ES21528
SUMMARY OF %RPD RE
STAGE 2 ESA - ALS DUP
All results in mg/kg

Sample ID	DUP5	DUP5	RPD %	DUP6	DUP6	RPD %
Area	AREA D			AREA D		
Geological Origin	Amdel	ALS		Amdel	ALS	
Date of Sampling						
Depth (m)						
HEAVY METALS						
Arsenic	<5	2	ND	<5	1	ND
Cadmium	<0.5	<1	ND	<0.5	<1	ND
Chromium - total	<5	5	NC	<5	1	NC
Copper	29	22	27	<5	3	NC
Nickel	5	7	33	<2	<1	ND
Lead	22	26	17	11	9	20
Zinc	36	46	24	42	52	21
Mercury	0.27	0.50	60	<0.05	<0.1	ND
TOTAL PETROLEUM HYDROCARB						
C6 - C9 Fraction	<5	<2	ND	<5	<2	ND
C10 - C14 Fraction	<10	<50	ND	<10	<50	ND
C15 - C28 Fraction	50	<100	ND	<50	<100	ND
C29 - C36 Fraction	60	<100	ND	<50	<100	ND
Total C10-C36	110	ND	ND	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<0.2	ND	<1	<0.2	ND
Ethylbenzene	<1	<0.2	ND	<1	<0.2	ND
Total Xylene	ND	ND	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROC						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	1	<0.5	NC	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	3	1.1	91	<0.5	<0.5	ND
Pyrene	3	1.3	73	<0.5	<0.5	ND
Benzo(a)anthracene	1	0.7	53	<0.5	<0.5	ND
Chrysene	1	0.7	53	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	3	<1.5	NC	<1	<0.5	ND
Benzo(a)pyrene	1	0.8	55	<0.5	<0.5	ND
Indeno(123-cd)pyrene	1	<0.5	NC	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(ghi)perylene	1	0.6	50	<0.5	<0.5	ND
Total PAHs	15.4	5	99	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/3 Laboratory batch: ALS Environmental ES51721

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 1; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	N/A
Inter-Laboratory Field Duplicates	1	N/A
Trip Blanks	0	N/A
Wash Blanks	0	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	N/A	N/A
B. Were an Adequate Number of inter-laboratory field duplicates analysed?	☒	☐
C. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Intra-laboratory duplicates were collected as part of the greater sampling program in other lab batches.
RPDs for Zinc in DUP13 (Amdel vs ALS) was in excess of the control limit. Given that the concentrations detected are marginal in both duplicate samples and the respective landuse criteria are an order of magnitude higher than the concentration detected, this exceedences is not considered to affect the usability of the data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	N/A	N/A
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Intra-laboratory trip and wash blanks were collected and analysed as part of the greater sampling procedure. This is a duplicate sample batch. Trip blank and spike results from other batches indicate that sample transportation and handling procedures were adequate.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	N/A	N/A
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Intra-laboratory trip spikes were collected and analysed as part of the greater sampling procedure.

Field QA / QC was:

- ☐ **Satisfactory**
- ☒ **Partially Satisfactory**
- ☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples

	TPH / BTEX	PAH	OCP	Metals
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes (MS) /Matrix Spike Duplicates (MSD)	2	2	2	1
Laboratory Duplicates	0	0	0	0
Laboratory Control Samples (LCS) / Duplicates (SCS/DCS)	2	2	2	1
Surrogates	3	3	3	0

	Yes	No (Comment below)
2. Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	N/A	N/A
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

.....

.....

.....

QA / QC Report Prepared by: **Aaron Rastall**

QA / QC Report Reviewed by:

(Andrew Barwick - Project Manager)

E12723/3
20/05/2005

TABLE 4E2106 vs ES51721
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA B (QCQA)
All results in mg/kg

Sample ID	CBH62	DUP13	DUP13	RPD %
Geological Origin	PRIMARY	ALS	AMDEL	AMDEL
Date of Sampling	1-Nov-04			vs
Depth (m)	0.3-0.5			ALS
HEAVY METALS				
Arsenic	<5	2	<5	ND
Cadmium	<0.5	<1	<0.5	ND
Chromium - total	<5	<1	<5	ND
Copper	<5	<1	<5	ND
Nickel	<2	<1	<2	ND
Lead	<5	3	<5	ND
Zinc	9	11	30	93
Mercury	<0.05	<0.1	<0.05	ND
TOTAL PETROLEUM HYDROCARBONS				
C6 - C9 Fraction	<5	<2	<5	ND
C10 - C14 Fraction	<10	<50	<10	ND
C15 - C28 Fraction	<50	<100	<50	ND
C29 - C36 Fraction	<50	<100	<50	ND
Total C10-C36	ND	ND	ND	ND
BTEX				
Benzene	<0.2	<0.2	<0.2	ND
Toluene	<1	<0.2	<1	ND
Ethylbenzene	<1	<0.2	<1	ND
Total Xylene	ND	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS				
Naphthalene	<0.5	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<1	<1	ND
Benzo(a)pyrene	<0.5	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	<0.5	ND
Total PAHs	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS				
	<0.5	<0.5	<0.5	ND
ASBESTOS	ND	ND	ND	ND

NOTES:

	RPD exceeds contol limit of 50%
ND	Both primary and duplicate samples were not detected
NC	RPD not calculated as primary sample was not detected, while the duplicate sample produced values above detection limits, or vice versa

E12723/3
19/05/2005

TABLE ES51721
SUMMARY OF %RPD RESULTS - SOIL
STAGE 2 ESA - AREA B (QCQA)
All results in mg/kg

Sample ID	CBH62	DUP13	RPD %
Geological Origin		ALS	
Date of Sampling	1-Nov-04		
Depth (m)	0.3-0.5		
HEAVY METALS			
Arsenic	<5	2	ND
Cadmium	<0.5	<1	ND
Chromium - total	<5	<1	ND
Copper	<5	<1	ND
Nickel	<2	<1	ND
Lead	<5	3	ND
Zinc	9	11	20
Mercury	<0.05	<0.1	ND
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction	<5	<2	ND
C10 - C14 Fraction	<10	<50	ND
C15 - C28 Fraction	<50	<100	ND
C29 - C36 Fraction	<50	<100	ND
Total C10-C36	ND	ND	ND
BTEX			
Benzene	<0.2	<0.2	ND
Toluene	<1	<0.2	ND
Ethylbenzene	<1	<0.2	ND
Total Xylene	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	ND
Benzo(a)anthracene	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	ND
Benzo(b)&(k)fluorant	<1	<1	ND
Benzo(a)pyrene	<0.5	<0.5	ND
Indeno(123-cd)pyrene	<0.5	<0.5	ND
Dibenz(ah)anthracene	<0.5	<0.5	ND
Benzo(ghi)perylene	<0.5	<0.5	ND
Total PAHs	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS			
	<0.5	<0.5	ND
ASBESTOS	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits, or vice versa

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185051	E185053	E185054	
		CBH90	CBH92	CBH93	DUPB11	
	Sample Id	0.0-0.2	0.0-0.1	0.0-0.05	17.3.05	
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd	nd	
a-BHC	0.1	nd	nd	nd	nd	
g-BHC	0.1	nd	nd	nd	nd	
Heptachlor	0.1	nd	nd	nd	nd	
Aldrin	0.1	nd	nd	nd	nd	
b-BHC	0.1	nd	nd	nd	nd	
d-BHC	0.1	nd	nd	nd	nd	
Oxychlordane	0.1	nd	nd	nd	nd	
Heptachlor epoxide	0.1	nd	nd	nd	nd	
Endosulfan 1	0.1	nd	nd	nd	nd	
Chlordane-Trans	0.1	nd	nd	nd	nd	
Chlordane-Cis	0.1	nd	nd	nd	nd	
trans-Nonachlor	0.1	nd	nd	nd	nd	
DDE	0.1	nd	nd	nd	nd	
Dieldrin	0.1	nd	nd	nd	nd	
Endrin	0.1	nd	nd	nd	nd	
DDD	0.1	nd	nd	nd	nd	
Endosulfan 2	0.1	nd	nd	nd	nd	
DDT	0.1	nd	nd	nd	nd	
Endosulfan sulfate	0.1	nd	nd	nd	nd	
Methoxychlor	0.1	nd	nd	nd	nd	
2.4.5.6-TCMX-SURROGATE	1	124%	103%	117%	108%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185048	E185051	E185053	E185054	
		CBH90	CBH92	CBH93	DUPB11	
	Sample Id	0.0-0.2	0.0-0.1	0.0-0.05	17.3.05	
	PQL					
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd	nd	nd	nd	
Mevinphos	0.5	nd	nd	nd	nd	
Ethoprop	0.5	nd	nd	nd	nd	
Phorate	0.5	nd	nd	nd	nd	
Demeton-s-methyl	0.5	nd	nd	nd	nd	
Diazinon	0.5	nd	nd	nd	nd	
Disulfoton	0.5	nd	nd	nd	nd	
Ronnel	0.5	nd	nd	nd	nd	
Chlorpyrifos methyl	0.5	nd	nd	nd	nd	
Chlorpyrifos	0.5	nd	nd	nd	nd	
Merphos	0.5	nd	nd	nd	nd	
Parathion methyl	0.5	nd	nd	nd	nd	
Fenthion	0.5	nd	nd	nd	nd	
Malathion	0.5	nd	nd	nd	nd	
Fenitrothion	0.5	nd	nd	nd	nd	
Prothiophos	0.5	nd	nd	nd	nd	
Stirophos	0.5	nd	nd	nd	nd	
Ethion	0.5	nd	nd	nd	nd	
Bolstar	0.5	nd	nd	nd	nd	
Fensulfothion	0.5	nd	nd	nd	nd	
Azinphos methyl	0.5	nd	nd	nd	nd	
Coumaphos	0.5	nd	nd	nd	nd	
2-Nitro-m-xylene-SURROGATE	1	89%	81%	86%	76%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27329
Project : E12723/4 AREA B

Analyte	Lab No	E185055	E185056	E185057		
		TSB17	TBB17	WBB17		
	Sample Id	17.3.05	17.3.05	17.3.05		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	--	nd		
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	--	nd		
C15-C28 Fraction	100	--	--	nd		
C29-C36 Fraction	100	--	--	nd		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	10	nd	nd		
Toluene	1	9	nd	nd		
Ethylbenzene	1	9	nd	nd		
m&p-Xylene	2	18	nd	nd		
o-Xylene	1	9	nd	nd		
4-Bromofluorobenzene-SURROGATE	1	94%	82%	76%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185057				
		WBB17				
	Sample Id	17.3.05				
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.001				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	0.003				
Nickel	0.001	0.001				
Lead	0.001	nd				
Zinc	0.002	0.004				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185057				
		WBB17				
	Sample Id	17.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	77%				
Anthracene-D10-SURROGATE	1	86%				
p-Terphenyl-D14-SURROGATE	1	90%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185057				
		WBB17				
	Sample Id	17.3.05				
	PQL					
E0080 OC Pesticides in Water (ug/L)						
HCB	1	nd				
a-BHC	1	nd				
g-BHC	1	nd				
Heptachlor	1	nd				
Aldrin	1	nd				
b-BHC	1	nd				
d-BHC	1	nd				
Oxychlordane	1	nd				
Heptachlor epoxide	1	nd				
Endosulfan 1	1	nd				
Chlordane-Trans	1	nd				
Chlordane-Cis	1	nd				
trans-Nonachlor	1	nd				
DDE	1	nd				
Dieldrin	1	nd				
Endrin	1	nd				
DDD	1	nd				
Endosulfan 2	1	nd				
DDT	1	nd				
Endosulfan sulfate	1	nd				
Methoxychlor	1	nd				
2.4.5.6-TCMX-SURROGATE	1	74%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1051

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27329

Project : E12723/4 AREA B

Analyte	Lab No	E185057				
		WBB17				
	Sample Id	17.3.05				
	PQL					
E0090 OP Pesticides in Water (ug/L)						
Dichlorvos	10	nd				
Mevinphos	10	nd				
Ethoprop	10	nd				
Phorate	10	nd				
Demeton-s-methyl	10	nd				
Diazinon	10	nd				
Disulfoton	10	nd				
Ronnel	10	nd				
Chlorpyrifos methyl	10	nd				
Chlorpyrifos	10	nd				
Merphos	10	nd				
Parathion methyl	10	nd				
Fenthion	10	nd				
Malathion	10	nd				
Fenitrothion	10	nd				
Prothiofos	10	nd				
Stirophos	10	nd				
Ethion	10	nd				
Bolstar	10	nd				
Fensulfothion	10	nd				
Azinphos methyl	10	nd				
Coumaphos	10	nd				
2-nitro-m-xylene-SURROGATE	1	78%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5612/ 8147 / 1 - 3
Your ref: 5E1051
NATA Accreditation No: 14484

1 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff,
NSW 2285.

Attn: Ms. Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of three samples, forwarded by Amdel Laboratories Ltd, on 29 March 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5612 / 8147 / 1. E185048 / CBH90 0.0-0.2.
Approx dimensions 4.5 cm x 4.5 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of plaster, bitumen and brick.
No asbestos detected.

Sample No. 2. ASET5612 / 8147 / 2. E185051 / CBH92 0.0-0.1.
Approx dimensions 4.5 cm x 4.5 cm x 3.0 cm
The sample consisted of mixture of clayish soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

Sample No. 3. ASET5612 / 8147 / 3. E185053 / CBH93 0.0-0.5.
Approx dimensions 4.5 cm x 4.5 cm x 4.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter, fragments of bitumen and plaster.
No asbestos detected.

NATA Accredited Laboratory Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements, which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Micheala Foley B EnvSc
Environmental Scientist / Approved Analyst

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

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1051

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPH (C6-C9) and BTEX analsyed by NATA Accreditation 14356.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1051

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1051

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185048)							
C6-C9 Fraction	100	100		102%			
E1221 TPH in Soil (E185048)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		85%			
C29-C36 Fraction							

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	72			72%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			93%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	8.4			84%		
Toluene	10	11			110%		
Ethylbenzene	10	10			99%		
m&p-Xylene	20	20			98%		
o-Xylene	10	10			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185048)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E185048)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E185048)							
Arsenic	50	43		85%			
Cadmium	50	40		80%			
Chromium	50	43		87%			
Copper	50	50		100%			
Nickel	50	41		83%			
Lead	50	41		82%			
Zinc	50	43		87%			
E5950 Mercury in Soil (E185048)							
Mercury	0.50	0.45		91%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	42			83%		
Cadmium	50	40			81%		
Chromium	50	43			87%		
Copper	50	46			92%		
Nickel	50	42			84%		
Lead	50	44			88%		
Zinc	50	42			84%		
E5950 Mercury in Soil							
Mercury	0.50	0.45			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E185048)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	nd	nd						
Copper	10	8	9	22%				
Nickel	4	3	4	28%				
Lead	9	9	9	0%				
Zinc	21	17	19	21%				
E5950 Mercury in Soil (E185048)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E185048)							
Naphthalene	5	4.2		86%			
Acenaphthylene	5	4.6		93%			
Acenaphthene	5	4.4		87%			
Fluorene	5	4.6		91%			
Phenanthrene	5	4.2		85%			
Anthracene	5	4.4		86%			
Fluoranthene	5	4.4		87%			
Pyrene	5	4.2		85%			
Benz(a)anthracene	5	4.6		91%			
Chrysene	5	4.4		87%			
Benzo(b) & (k)fluoranthene	10	9		95%			
Benzo(a)pyrene	5	4.8		97%			
Indeno(1.2.3-cd)pyrene	5	5.2		103%			
Dibenz(a.h)anthracene	5	4.8		97%			
Benzo(g.h.i)perylene	5	4.4		89%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			78%		
Acenaphthylene	5	4.0			79%		
Acenaphthene	5	4.0			80%		
Fluorene	5	4.0			80%		
Phenanthrene	5	4.0			79%		
Anthracene	5	4.0			78%		
Fluoranthene	5	3.8			77%		
Pyrene	5	4.0			79%		
Benz(a)anthracene	5	3.8			74%		
Chrysene	5	4.0			80%		
Benzo(b) & (k)fluoranthene	10	8			80%		
Benzo(a)pyrene	5	3.6			72%		
Indeno(1.2.3-cd)pyrene	5	4.0			79%		
Dibenz(a.h)anthracene	5	3.6			73%		
Benzo(g.h.i)perylene	5	3.8			76%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E185048)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	10			103%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	10			102%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	10			105%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	10			103%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	10			100%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			108%		
a-BHC	0.5	0.5			106%		
g-BHC	0.5	0.5			104%		
Heptachlor	0.5	0.5			104%		
Aldrin	0.5	0.5			106%		
b-BHC	0.5	0.5			104%		
d-BHC	0.5	0.5			106%		
Oxychlordane	0.5	0.5			106%		
Heptachlor epoxide	0.5	0.5			106%		
Endosulfan 1	0.5	0.5			106%		
Chlordane-Trans	0.5	0.5			104%		
Chlordane-Cis	0.5	0.5			104%		
trans-Nonachlor	0.5	0.5			104%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			104%		
Endrin	0.5	0.5			106%		
DDD	1	1.2			110%		
Endosulfan 2	0.5	0.5			100%		
DDT	1	0.9			85%		
Endosulfan sulfate	0.5	0.5			94%		
Methoxychlor	0.5	0.4			84%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1090 OP Pesticides in Soil							
Dichlorvos	5	5.0			98%		
Mevinphos	5	5.0			98%		
Ethoprop	5	5.0			98%		
Phorate	5	5.0			98%		
Demeton-s-methyl	5	5.0			98%		
Diazinon	5	4.8			96%		
Disulfoton	5	4.8			96%		
Ronnel	5	4.8			96%		
Chlorpyrifos methyl	5	4.8			96%		
Chlorpyrifos	5	5.0			98%		
Parathion methyl	5	4.8			96%		
Fenthion	5	4.8			94%		
Malathion	5	5.0			98%		
Fenitrothion	5	4.8			96%		
Prothiophos	5	4.8			96%		
Stirophos	5	4.6			92%		
Ethion	5	5.0			98%		
Bolstar	5	5.0			98%		
Fensulfothion	5	5.0			100%		
Azinphos methyl	5	5.0			100%		
Coumaphos	5	5.0			98%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1090 OP Pesticides in Soil						
Dichlorvos	0.5	nd				
Mevinphos	0.5	nd				
Ethoprop	0.5	nd				
Phorate	0.5	nd				
Demeton-s-methyl	0.5	nd				
Diazinon	0.5	nd				
Disulfoton	0.5	nd				
Ronnel	0.5	nd				
Chlorpyrifos methyl	0.5	nd				
Chlorpyrifos	0.5	nd				
Parathion methyl	0.5	nd				
Fenthion	0.5	nd				
Malathion	0.5	nd				
Fenitrothion	0.5	nd				
Prothiophos	0.5	nd				
Stirophos	0.5	nd				
Ethion	0.5	nd				
Bolstar	0.5	nd				
Fensulfothion	0.5	nd				
Azinphos methyl	0.5	nd				
Coumaphos	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	200			96%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	4960			90%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	9.4			94%		
Toluene	10	9			92%		
Ethylbenzene	10	8			83%		
m&p-Xylene	20	18			89%		
o-Xylene	10	9			95%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4870 Dissolved Metals in Waters							
Arsenic	0.100	0.096			96%		
Cadmium	0.1000	0.094			94%		
Chromium	0.100	0.103			103%		
Copper	0.100	0.102			102%		
Nickel	0.100	0.107			107%		
Lead	0.100	0.098			98%		
Zinc	0.100	0.093			93%		
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			77%		
Acenaphthylene	10	8			77%		
Acenaphthene	10	8			76%		
Fluorene	10	8			76%		
Phenanthrene	10	8			79%		
Anthracene	10	8			79%		
Fluoranthene	10	8			82%		
Pyrene	10	8			81%		
Benz(a)anthracene	10	8			77%		
Chrysene	10	9			87%		
Benzo(b) & (k)fluoranthene	20	16			78%		
Benzo(a)pyrene	10	8			75%		
Indeno(1.2.3-cd)pyrene	10	7			75%		
Dibenz(a.h)anthracene	10	8			84%		
Benzo(g.h.i)perylene	10	8			82%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0080 OC Pesticides in Water (ug/L)							
HCB	10	10			95%		
a-BHC	10	11			106%		
g-BHC	10	11			105%		
Heptachlor	10	10			100%		
Aldrin	10	10			100%		
b-BHC	10	10			97%		
d-BHC	10	11			114%		
Oxychlordane	10	10			98%		
Heptachlor epoxide	10	10			100%		
Endosulfan 1	10	10			100%		
Chlordane-Trans	10	10			102%		
Chlordane-Cis	10	10			101%		
trans-Nonachlor	10	10			100%		
DDE	20	20			99%		
Dieldrin	10	10			104%		
Endrin	10	11			107%		
DDD	20	20			102%		
Endosulfan 2	10	10			102%		
DDT	20	22			108%		
Endosulfan sulfate	10	11			107%		
Methoxychlor	10	11			108%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0080 OC Pesticides in Water (ug/L)						
HCB	1	nd				
a-BHC	1	nd				
g-BHC	1	nd				
Heptachlor	1	nd				
Aldrin	1	nd				
b-BHC	1	nd				
d-BHC	1	nd				
Oxychlordane	1	nd				
Heptachlor epoxide	1	nd				
Endosulfan 1	1	nd				
Chlordane-Trans	1	nd				
Chlordane-Cis	1	nd				
trans-Nonachlor	1	nd				
DDE	1	nd				
Dieldrin	1	nd				
Endrin	1	nd				
DDD	1	nd				
Endosulfan 2	1	nd				
DDT	1	nd				
Endosulfan sulfate	1	nd				
Methoxychlor	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1051

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0090 OP Pesticides in Water (ug/L)							
Dichlorvos	100	90			93%		
Mevinphos	100	100			98%		
Ethoprop	100	90			93%		
Phorate	100	90			92%		
Demeton-s-methyl	100	100			96%		
Diazinon	100	100			95%		
Disulfoton	100	90			93%		
Ronnel	100	90			94%		
Chlorpyrifos methyl	100	100			97%		
Chlorpyrifos	100	100			96%		
Merphos							
Parathion methyl	100	90			90%		
Fenthion	100	90			92%		
Malathion	100	90			92%		
Fenitrothion	100	100			98%		
Prothiofos	100	100			98%		
Stirophos	100	100			103%		
Ethion	100	100			97%		
Bolstar	100	100			98%		
Fensulfothion	100	100			98%		
Azinphos methyl	100	100			105%		
Coumaphos	100	100			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0090 OP Pesticides in Water (ug/L)						
Dichlorvos	10	nd				
Mevinphos	10	nd				
Ethoprop	10	nd				
Phorate	10	nd				
Demeton-s-methyl	10	nd				
Diazinon	10	nd				
Disulfoton	10	nd				
Ronnel	10	nd				
Chlorpyrifos methyl	10	nd				
Chlorpyrifos	10	nd				
Merphos	10	nd				
Parathion methyl	10	nd				
Fenthion	10	nd				
Malathion	10	nd				
Fenitrothion	10	nd				
Prothiofos	10	nd				
Stirophos	10	nd				
Ethion	10	nd				
Bolstar	10	nd				
Fensulfothion	10	nd				
Azinphos methyl	10	nd				
Coumaphos	10	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 17/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27329
Project:	E12723/4 AREA B
Our Reference Number :	5E1051
Date Received by Amdel :	17/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	6	
TPH C6-C9 by Purge & Trap	E1230	5	Amdel's turnaround times are typicaliy 3-5 working days.
TPH (C10-C36)	E1221	5	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	3	
Volatile Organic Compounds	E1290	2	
Metals by ICP-AES	E5910	6	
Mercury in Soil	E5950	6	
Polycyclic Aromatic Hydrocarbons	E1110	5	
Organochlorine Pesticides	E1080	4	
Organophosphorus Pesticides	E1090	4	
Asbestos	E8110	3	
Samples on Hold (Soil)	E7600	1	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	3	
TPH C6-C9 by purge & trap	E0230	1	

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 17/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27329
Project:	E12723/4 AREA B
Our Reference Number :	5E1051
Date Received by Amdel :	17/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
TPH (C10-C36)	E0221F	1	
Total Metals by ICP-MS	E4970	1	Amdel's turnaround times
Mercury	E4950	1	are typically 3-5 working
Polycyclic Aromatic Hydrocarbons	E0110	1	days.
Organochlorine Pesticides	E0080	1	
Organophosphorus Pesticides	E0090	1	
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
	CBH83 0.2-0.3	16/3/05					1			
	CBH83 0.5-0.95	16/3/05				1	1			1
	CBH83 1.2-1.65	16/3/05					1			
	CBH84 0.2-0.3	16/3/05				1	1			1
	CBH84 0.4-0.5	16/3/05					1			
	CBH85 0.15-0.25	16/3/05		1			1			1
	CBH85 0.5-0.6	16/3/05				1	1			
	CBH85 1.1-1.45	16/3/05					1			
	CBH86 0.2-0.3	16/3/05				1	1			
	CBH86 0.5-0.95	16/3/05					1			
	HA25 0.6-0.7	16/3/05					1			
	HA29 0.15-0.2	16/3/05				1	1			1
	HA29 0.6-0.7	16/3/05					1			
	HA28 0.0-0.1	16/3/05		1			1	1	1	1
	HA28 0.8-0.9	16/3/05					1			
	DUPB9	16/3/05		1			1			
	TS B 16/3/05	16/3/05								
	TB B 16/3/05	16/3/05								
	WB B 16/3/05	16/3/05								
E185048	CBH90 0.0-0.2	17/3/05				1	1	1	1	1
49	CBH90 0.5-0.95	17/3/05				1	1			
50	CBH90 1.3-1.5	17/3/05								
51	CBH92 0.0-0.1	17/3/05		1			1	1	1	1
52	CBH92 0.15-0.25	17/3/05					1			
53	CBH93 0.0-0.05	17/3/05		1			1	1	1	1
54	DUPB11	17/3/05		1			1	1	1	
55	TS B 17/3/05	17/3/05			1					
56	TB B 17/3/05	17/3/05			1					
57	WB B 17/3/05	17/3/05		1			1	1	1	
			No. of Analyses	13	2	15	43	8	8	21

RECEIVED
22 MAR 2005
5E1051

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

B.M.
22/3

AREA B

No: 27329

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Gillis	Consigning Office: SYD Date Dispatched: 17/3/05
Attention: JULIE FOWLER	Project Manager: (report results to) Anne Nathanay	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gillis	17/3/05	4pm	Emily Yan	18/3	6.30
Adam Gillis			Joshua Trahair AV=9.35	18/3	1:30pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
E18S048	Soil	Glass Unpreserved	CBH90 0.0-0.2	17/3/05					
49			" 0.5-0.95						
50			" 1.3-1.5		HOLD AND WAIT FOR FURTHER INSTRUCTIONS				
51			CBH92 0.0-0.1						
52			" 0.15-0.25						
57			CBH93 0.0-0.05						
54			DUP B11						
~~55~~			DUP B12 1V		SEND TO ALS TO HOLD FOR INSTRUCTIONS				
~~56~~ 55	Water		TS B17/3/05 $ TS050310-18						
~~57~~ 56			TB B17/3/05 $ 1V		HOLD AND WAIT FOR FURTHER INSTRUCTIONS				
57			WB B17/3/05						
			→ 500ml o/p G, FMetals, 2V						

7 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Coffey WHITE: Sign on release YELLOW: If dispatched to Interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1052
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	19
Reference/Order	:	E12723/4/27330-1
Project	:	E12723/4 AREA D
Received Samples	:	17/03/05
Instructions	:	24/03/05
Date Reported	:	12/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1052

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	01/04/05	04/04/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	31/03/05	08/04/05	GTO	094
E1221	TPH (C10-C36)	31/03/05	07/04/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	31/03/05	08/04/05	GTO	094
E5910	Metals by ICP-AES	04/04/05	04/04/05	DLU	093
E5950	Mercury in Soil	04/04/05	04/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	31/03/05	02/04/05	MFA	095
E1080	Organochlorine Pesticides	31/03/05	01/04/05	MFA	095
E1120	Polychlorinated Biphenyls in Soil, mg/kg	31/03/05	01/04/05	MFA	095
E1290	Volatile Organic Compounds	31/03/05	01/04/05	GTO	094

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185058	E185060	E185062	E185063	E185064
		CBH140	CBH140	CBH141	CBH141	CBH142
	Sample Id	0.0-0.2	1.4-1.5	0.5-0.95	1.3-1.75	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%	20%	5%	20%	8%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	20	nd	50	nd	50
C15-C28 Fraction	50	300	200	280	nd	220
C29-C36 Fraction	50	420	140	90	nd	80
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	--	--	nd
Toluene	1	nd	nd	--	--	nd
Ethylbenzene	1	nd	nd	--	--	nd
m&p-Xylene	2	nd	nd	--	--	nd
o-Xylene	1	nd	nd	--	--	nd
4-Bromofluorobenzene-SURROGATE	1	82%	83%	--	--	82%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185065	E185067	E185068	E185070	E185071
		CBH142	CBH143	CBH143	CBH144	CBH144
	Sample Id	0.5-0.7	0.5-0.6	1.7-2.15	0.5-0.6	1.5-1.95
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	7%	20%	7%	30%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	85%	81%	91%	76%	86%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27330-1

Project : E12723/4 AREA D

Analyte	Lab No	E185058	E185060	E185062	E185063	E185064
		CBH140	CBH140	CBH141	CBH141	CBH142
	Sample Id	0.0-0.2	1.4-1.5	0.5-0.95	1.3-1.75	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	6	nd	9	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	8	nd	6	6	5
Copper	5	11	10	19	nd	10
Nickel	2	3	nd	7	nd	nd
Lead	5	66	36	57	7	54
Zinc	5	61	59	110	28	53
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185065	E185067	E185068	E185070	E185071
		CBH142	CBH143	CBH143	CBH144	CBH144
	Sample Id	0.5-0.7	0.5-0.6	1.7-2.15	0.5-0.6	1.5-1.95
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	6	5	nd	6	7
Copper	5	17	12	nd	15	nd
Nickel	2	5	6	4	9	6
Lead	5	64	26	12	38	6
Zinc	5	110	69	34	85	25
E5950 Mercury in Soil						
Mercury	0.05	0.09	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27330-1

Project : E12723/4 AREA D

Analyte	Lab No	E185058	E185060	E185062	E185063	E185064
		CBH140	CBH140	CBH141	CBH141	CBH142
	Sample Id	0.0-0.2	1.4-1.5	0.5-0.95	1.3-1.75	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	0.6	4.4	nd	nd
Anthracene	0.5	nd	nd	1.4	nd	nd
Fluoranthene	0.5	0.7	2.4	7.4	nd	nd
Pyrene	0.5	0.8	2.8	7.2	nd	nd
Benz(a)anthracene	0.5	nd	1.8	3.4	nd	nd
Chrysene	0.5	nd	1.4	2.6	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	5	5	nd	nd
Benzo(a)pyrene	0.5	0.5	3.2	3.4	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	3.2	2.8	nd	nd
Dibenz(a.h)anthracene	0.5	nd	0.6	0.5	nd	nd
Benzo(g.h.i)perylene	0.5	nd	2.2	1.8	nd	nd
Total USEPA Priority PAHs	0.5	2.0	22	40	nd	nd
2-Fluorobiphenyl-SURROGATE	1	87%	91%	86%	103%	88%
Anthracene-d10-SURROGATE	1	83%	87%	80%	98%	82%
p-Terphenyl-D14-SURROGATE	1	87%	89%	86%	100%	86%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185065	E185067	E185068	E185070	E185071
		CBH142	CBH143	CBH143	CBH144	CBH144
	Sample Id	0.5-0.7	0.5-0.6	1.7-2.15	0.5-0.6	1.5-1.95
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.8	0.6	nd	0.6	nd
Pyrene	0.5	0.9	0.7	nd	0.7	nd
Benz(a)anthracene	0.5	0.5	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	1	nd	nd	nd	nd
Benzo(a)pyrene	0.5	0.7	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	0.7	0.5	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	4.6	1.8	nd	1.2	nd
2-Fluorobiphenyl-SURROGATE	1	91%	106%	97%	93%	89%
Anthracene-d10-SURROGATE	1	88%	102%	95%	90%	85%
p-Terphenyl-D14-SURROGATE	1	89%	103%	96%	92%	87%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27330-1

Project : E12723/4 AREA D

Analyte	Lab No	E185058				
		CBH140				
	Sample Id	0.0-0.2				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	nd				
2.4.5.6-TCMX-SURROGATE	1	88				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27330-1

Project : E12723/4 AREA D

Analyte	Lab No	E185058				
		CBH140				
	Sample Id	0.0-0.2				
	PQL					
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				
Total Polychlorinated biphenyl	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27330-1

Project : E12723/4 AREA D

Analyte	Lab No	E185062	E185063			
		CBH141	CBH141			
	Sample Id	0.5-0.95	1.3-1.75			
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd			
Bromobenzene	1	nd	nd			
Bromochloromethane	1	nd	nd			
Bromodichloromethane	1	nd	nd			
Bromoform	1	nd	nd			
Bromomethane	1	nd	nd			
n-Butylbenzene	1	nd	nd			
sec-Butylbenzene	1	nd	nd			
tert-Butylbenzene	1	nd	nd			
Carbon tetrachloride	1	nd	nd			
Chlorobenzene	1	nd	nd			
Chloroethane	1	nd	nd			
Chloroform	1	nd	nd			
Chloromethane	1	nd	nd			
2-Chlorotoluene	1	nd	nd			
4-Chlorotoluene	1	nd	nd			
Dibromochloromethane	1	nd	nd			
1.2-Dibromo-3-chloropropane	1	nd	nd			
1.2-Dibromoethane (EDB)	1	nd	nd			
Dibromomethane	1	nd	nd			
1.2-Dichlorobenzene	1	nd	nd			
1.3-Dichlorobenzene	1	nd	nd			
1.4-Dichlorobenzene	1	nd	nd			
Dichlorodifluoromethane	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185062	E185063			
		CBH141	CBH141			
	Sample Id	0.5-0.95	1.3-1.75			
	PQL					
1.1-Dichloroethene	1	nd	nd			
1.2-Dichloroethane	1	nd	nd			
1.1-Dichloroethane	1	nd	nd			
cis-1.2-Dichloroethene	1	nd	nd			
trans-1.2-Dichloroethene	1	nd	nd			
1.2-Dichloropropane	1	nd	nd			
1.3-Dichloropropane	1	nd	nd			
2.2-Dichloropropane	1	nd	nd			
1.1-Dichloropropylene	1	nd	nd			
cis-1.3-Dichloropropylene	1	nd	nd			
trans-1.3-Dichloropropylene	1	nd	nd			
Ethylbenzene	1	nd	nd			
Hexachlorobutadiene	1	nd	nd			
Isopropylbenzene	1	nd	nd			
p-Isopropyltoluene	1	nd	nd			
Methylene chloride	1	nd	nd			
Naphthalene	1	nd	nd			
n-Propylbenzene	1	nd	nd			
Styrene	1	nd	nd			
1.1.1.2-Tetrachloroethane	1	nd	nd			
1.1.2.2-Tetrachloroethane	1	nd	nd			
Tetrachloroethene	1	nd	nd			
Toluene	1	nd	nd			
1.2.3-Trichlorobenzene	1	nd	nd			
1.2.4-Trichlorobenzene	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1052
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27330-1
Project : E12723/4 AREA D

Analyte	Lab No	E185062	E185063			
		CBH141	CBH141			
	Sample Id	0.5-0.95	1.3-1.75			
	PQL					
1.1.1-Trichloroethane	1	nd	nd			
1.1.2-Trichloroethane	1	nd	nd			
Trichloroethene	1	nd	nd			
Trichlorofluoromethane	1	nd	nd			
1.2.3-Trichloropropane	1	nd	nd			
1.2.4-Trimethylbenzene	1	nd	nd			
1.3.5-Trimethylbenzene	1	nd	nd			
Vinyl chloride	1	nd	nd			
ortho-Xylene	1	nd	nd			
meta- & para-Xylene	2	nd	nd			
2-Butanone (MEK)	10	nd	nd			
4-Methyl-2-Pentanone (MIBK)	10	nd	nd			
Pentafluorobenzene-SURROGATE	1	100%	100%			
Toluene-D8-SURROGATE	1	100%	99%			
4-Bromofluorobenzene-SURROGATE	1	99%	99%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5640/ 8194 / 1 - 5
Your ref: 5E1052
NATA Accreditation No: 14484

4 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of five samples, forwarded by Amdel Laboratories Ltd, on 1 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5640 / 8194 / 1. 5E1052 - CBH058 - E186357.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5640 / 8194 / 2. 5E1052 - CBH141 - E185062.
Approx dimensions 4.0 cm x 4.0 cm x 2.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

Sample No. 3. ASET5640 / 8194 / 3. 5E1052 - CBH142 - E185064.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 4. ASET5640 / 8194 / 4. 5E1052 - CBH143 - E185067.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 -- P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 5. ASET5640 / 9194 / 5. 5E1052 - CBH144 - E185070.
Approx dimensions 4.0 cm x 4.0 cm x 3.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1052

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1052

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185058)							
C6-C9 Fraction	100	80		80%			
E1221 TPH in Soil (E185063)							
C10-C14 Fraction							
C15-C28 Fraction	550	420		75%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E185058)							
Benzene	10	9.2		93%			
Toluene	10	9		85%			
Ethylbenzene	10	8		78%			
m&p-Xylene	20	16		79%			
o-Xylene	10	9		87%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	83			83%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	500			89%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.4			93%		
Toluene	10	9			89%		
Ethylbenzene	10	8			78%		
m&p-Xylene	20	17			83%		
o-Xylene	10	9			87%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185058)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E185058)								
C10-C14 Fraction	20	20	20	0%				
C15-C28 Fraction	380	300	340	23%				
C29-C36 Fraction	540	420	480	24%				
E1010 BTEX (P&T) in Soil (E185058)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E185058)							
Arsenic	50	48		96%			
Cadmium	50	45		90%			
Chromium	50	46		92%			
Copper	50	44		88%			
Nickel	50	45		89%			
Lead	50	36		71%			
Zinc	50	46		92%			
E5950 Mercury in Soil (E185058)							
Mercury	0.50	0.35		70%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	48			96%		
Cadmium	50	47			94%		
Chromium	50	49			97%		
Copper	50	46			93%		
Nickel	50	47			94%		
Lead	50	46			93%		
Zinc	50	45			90%		
E5950 Mercury in Soil							
Mercury	0.50	0.37			74%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E185058)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	6	8	7	28%				
Copper	10	11	11	9%				
Nickel	nd	3	3					
Lead	46	66	56	35%				
Zinc	52	61	57	15%				
E5950 Mercury in Soil (E185058)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E185058)							
Naphthalene	5	4.2		85%			
Acenaphthylene	5	5.0		99%			
Acenaphthene	5	4.4		88%			
Fluorene	5	4.6		92%			
Phenanthrene	5	4.8		94%			
Anthracene	5	4.4		90%			
Fluoranthene	5	4.6		93%			
Pyrene	5	4.6		92%			
Benz(a)anthracene	5	5.6		113%			
Chrysene	5	4.6		90%			
Benzo(b) & (k)fluoranthene	10	11		115%			
Benzo(a)pyrene	5	6.0		121%			
Indeno(1.2.3-cd)pyrene	5						
Dibenz(a.h)anthracene	5	6.4		129%			
Benzo(g.h.i)perylene	5	5.2		105%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	4.0			79%		
Acenaphthylene	5	4.4			87%		
Acenaphthene	5	4.0			79%		
Fluorene	5	4.0			80%		
Phenanthrene	5	4.0			80%		
Anthracene	5	4.0			79%		
Fluoranthene	5	4.0			79%		
Pyrene	5	4.0			79%		
Benz(a)anthracene	5	3.6			73%		
Chrysene	5	4.0			81%		
Benzo(b) & (k)fluoranthene	10	8			80%		
Benzo(a)pyrene	5	4.0			80%		
Indeno(1.2.3-cd)pyrene	5	3.8			78%		
Dibenz(a.h)anthracene	5	4.0			81%		
Benzo(g.h.i)perylene	5	4.2			85%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E185058)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	0.7	0.7	0.7	0%				
Pyrene	0.8	0.8	0.8	0%				
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	0.6	0.5	0.6	18%				
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			104%		
a-BHC	0.5	0.5			104%		
g-BHC	0.5	0.5			104%		
Heptachlor	0.5	0.5			104%		
Aldrin	0.5	0.5			104%		
b-BHC	0.5	0.5			104%		
d-BHC	0.5	0.5			106%		
Oxychlordane	0.5	0.5			104%		
Heptachlor epoxide	0.5	0.5			104%		
Endosulfan 1	0.5	0.5			104%		
Chlordane-Trans	0.5	0.5			104%		
Chlordane-Cis	0.5	0.5			102%		
trans-Nonachlor	0.5	0.5			104%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			104%		
Endrin	0.5	0.5			106%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			102%		
DDT	1	1.0			100%		
Endosulfan sulfate	0.5	0.5			104%		
Methoxychlor	0.5	0.5			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1120 Polychlorinated Biphenyls in Soil							
Aroclor 1016	-	--					
Aroclor 1221	-	--					
Aroclor 1232 & 1242 as total	-	--					
Aroclor 1248 & 1254 as total	-	--					
Aroclor 1260 & 1262 as total	10.00	13			125%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	12			117%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	12			117%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	11			108%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	12			117%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1052

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	11			114%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							
2-Butanone (MEK)							
4-Methyl-2-Pentanone (MIBK)							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1,1,1-Trichloroethane	1	nd				
1,1,2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1,2,3-Trichloropropane	1	nd				
1,2,4-Trimethylbenzene	1	nd				
1,3,5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
2-Butanone (MEK)	10	nd				
4-Methyl-2-Pentanone (MIBK)	10	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 17/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27330-1
Project:	E12723/4 AREA D
Our Reference Number :	5E1052
Date Received by Amdel :	17/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	10	
Volatile Organic Compounds	E1290	2	Amdel's turnaround times
Benzene,Toluene,Ethylbenzene & Xylene	E1010	8	are typically 3-5 working
TPH C6-C9 by Purge & Trap	E1230	10	days.
TPH (C10-C36)	E1221	10	
Metals by ICP-AES	E5910	10	
Mercury in Soil	E5950	10	
Polycyclic Aromatic Hydrocarbons	E1110	10	
Organochlorine Pesticides	E1080	1	
Polychlorinated Biphenyls in Soil, mg/k	E1120	1	
Asbestos	E8110	5	
Samples on Hold (Soil)	E7600	7	
Samples on Hold (Water)	E7605	3	
Batch Charge	E7619	1	

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

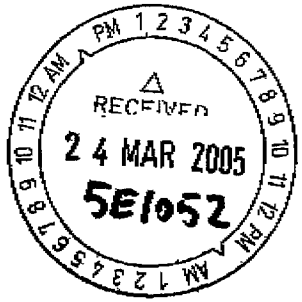
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
	WBD16/4	16/03/2005	Amber, 3 vials								
	DUPD6	16/03/2005									
	ALSD6	16/03/2005									
5E165058	CBH140 0.0-0.2	17/03/2005									
59	CBH140 0.5-0.95	17/03/2005		1				1	1	1	
60	CBH140 1.4-1.5	17/03/2005									
61	CBH141 0.0-0.2	17/03/2005		1				1			
62	CBH141 0.5-0.95	17/03/2005									
63	CBH141 1.3-1.75	17/03/2005					1	1		1	
64	CBH142 0.0-0.2	17/03/2005					1	1			
65	CBH142 0.5-0.7	17/03/2005		1				1		1	
66	CBH143 0.0-0.2	17/03/2005		1				1			
67	CBH143 0.5-0.6	17/03/2005									
68	CBH143 1.7-2.15	17/03/2005		1				1		1	
69	CBH144 0.0-0.2	17/03/2005		1				1			
70	CBH144 0.5-0.6	17/03/2005									
71	CBH144 1.5-1.95	17/03/2005		1				1		1	
76	CBH 9.2-9.65	17/03/2005	CHANGE NAME TO CBH99 9.2-9.65	1				1			
72	DUP3D	17/03/2005									
	DUP4D	17/03/2005									
73	TS D 17/3/05	17/03/2005	VIAL								
74	TB D 17/3/05	17/03/2005									
75	WB D 17/3/05	17/03/2005									
	CBH101 0.0-0.2	18/03/2005									
	CBH101 1.0-1.45	18/03/2005									
	CBH101 1.5-1.95	18/03/2005	CHANGE NAME TO CBH101 1.95-2.4	1				1		1	
	CBH103 0.0-0.2	18/03/2005		1				1			
	CBH103 1.1-1.45	18/03/2005									
	CBH103 2.2-2.45	18/03/2005		1				1	1	1	
	CBH105 0.0-0.2	18/03/2005		1				1			
	CBH105 1.2-1.65	18/03/2005						1			
	CBH105 2.4-2.85	18/03/2005		1				1		1	
	CBH105 4.0-4.45	18/03/2005		1				1			
											1

RECEIVED
24 MAR 2005
5E1052

	CBH106 1.5-1.95	16/03/2005	
	CBH106 3.0-3.45	16/03/2005	
	CBH198 0.0-0.2	16/03/2005	
	CBH198 1.1-1.5	16/03/2005	
	CBH198 2.0-2.4	16/03/2005	
	CBH198 2.8-2.35	16/03/2005	
	CBH199 0.0-0.2	16/03/2005	
	CBH199 1.2-1.75	16/03/2005	
	CBH199 2.5-2.8	16/03/2005	
	CBH199 4.55-4.7	16/03/2005	
	WDD16M	16/03/2005	
	DUPD6	16/03/2005	
	ALSD6	16/03/2005	
	CBH140 0.0-0.2	17/03/2005	1
	CBH140 0.5-0.95	17/03/2005	
	CBH140 1.4-1.5	17/03/2005	
	CBH141 0.0-0.2	17/03/2005	
	CBH141 0.5-0.95	17/03/2005	
	CBH141 1.3-1.75	17/03/2005	
	CBH142 0.0-0.2	17/03/2005	
	CBH142 0.5-0.7	17/03/2005	
	CBH143 0.0-0.2	17/03/2005	
	CBH143 0.5-0.6	17/03/2005	
	CBH143 1.7-2.15	17/03/2005	
	CBH144 0.0-0.2	17/03/2005	
	CBH144 0.5-0.6	17/03/2005	
	CBH144 1.5-1.95	17/03/2005	
	CBH 9.2-9.65	17/03/2005	
	DUP3D	17/03/2005	
	DUP4D	17/03/2005	
	TS D 17/3/05	17/03/2005	
	TB D 17/3/05	17/03/2005	
	WB D 17/3/05	17/03/2005	
	CBH101 0.0-0.2	18/03/2005	
	CBH101 1.0-1.45	18/03/2005	
	CBH101 1.5-1.95	18/03/2005	
	CBH103 0.0-0.2	18/03/2005	
	CBH103 1.1-1.45	18/03/2005	1
	CBH107 2.2-2.45	18/03/2005	
	CBH105 0.0-0.2	18/03/2005	
	CBH105 1.2-1.65	18/03/2005	
	CBH105 2.4-2.85	18/03/2005	
	CBH105 4.0-4.45	18/03/2005	
	WB 18/3	18/03/2005	
	CBH102 0.0-0.2	21/03/2005	
	CBH102 1.0-1.45	21/03/2005	
	CBH102 2.2-2.45	21/03/2005	
	CBH104 0.0-0.2	21/03/2005	
	CBH104 1.1-1.2	21/03/2005	
	CBH106 0.0-0.2	21/03/2005	
	CBH106 0.5-0.7	21/03/2005	1
	CBH106 1.4-1.65	21/03/2005	
	WB 21/3	21/03/2005	
	TRIP BLANK SE0831	21/03/2005	
	TS 050318.04	18/03/2005	
	DUPD8	21/03/2005	
	ALSD8	21/03/2005	

16
20

EIB5068



AREA D

No: 27330

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMPCL	Sampled by: Adam Gillis / Chris Inkstaedt	Consigning Office: SYD Date Dispatched: 17/3/05
Attention: JULIE COMON	Project Manager: (report results to) Anne Northway	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gillis	17/3/05	4pm	Liz Pitstock Andrea Cardno 45°C	18/3/5	9.30
Adam Gillis					2pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
E18505 8	Soil	Glass, Unpreserved	CBH140 0.0-0.2	17/3/05					
59			" 0.5-0.95						
60			" 1.4-1.5						
61			CBH141 0.0-0.2						
62			" 0.5-0.95		HOLD AND WAIT FOR FURTHER INSTRUCTIONS				
63			" 1.3-1.75						
64			CBH142 0.0-0.2						
65			" 0.5-0.7						
66			CBH143 0.0-0.2						
67			" 0.5-0.6						
68			" 1.7-2.15						
69			CBH144 0.0-0.2						
70			" 0.5-0.6						
71			" 1.5-1.95						
72			DUP 30						
—			DUP 40		SEND TO NLS TO HOLD FOR FURTHER INSTRUCTIONS				
73	Water		TS D17/3/05		HOLD AND WAIT FOR FURTHER INSTRUCTIONS				

17 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

AREA D

No: 27331

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 2 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEC	Sampled by: Adam Collis / Chris Westacott	Consigning Office: SYD Date Dispatched: 17/3/05
Attention: AMEC EDMON	Project Manager: (report results to) Anne Northway	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Collis	17/3/05	4pm	Liz Pittock Amdel Cardiff @ 4.50	17/3/05	6.30
Adam Collis					2PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
E185074	Water		TB D17/3/05						
↓ 75			ANB D17/3/05						
76	Soil	Jar + Ice	CBH 9-2-9.65	17/3/05	✓			Held For Further instructions	

17 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1071
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	11
Reference/Order	:	E12723/4/27332
Project	:	E12723/4
Received Samples	:	18/03/05
Instructions	:	18/03/05
Date Reported	:	13/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc., Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1071

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	01/04/05	01/04/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	01/04/05	11/04/05	JMC	094
E1221	TPH (C10-C36)	01/04/05	02/04/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	01/04/05	11/04/05	JMC	094
E5910	Metals by ICP-AES	04/04/05	04/04/05	DLU	093
E5950	Mercury in Soil	04/04/05	04/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA	095
E1080	Organochlorine Pesticides	01/04/05	02/04/05	MFA	095
E1120	Polychlorinated Biphenyls in Soil, mg/kg	01/04/05	02/04/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1071
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27332
Project : E12723/4

Analyte	Lab No	E185411	E185412	E185414	E185415	E185416
		CBH101	CBH101	CBH103	CBH103	CBH105
	Sample Id	1.0-1.45	1.95-2.4	1.1-1.45	2.2-2.45	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	6%	6%	6%	31%	14%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	--
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	--
C15-C28 Fraction	50	nd	nd	nd	nd	--
C29-C36 Fraction	50	nd	nd	60	70	--
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	--
Toluene	1	nd	nd	nd	nd	--
Ethylbenzene	1	nd	nd	nd	nd	--
m&p-Xylene	2	nd	nd	nd	nd	--
o-Xylene	1	nd	nd	nd	nd	--
4-Bromofluorobenzene-SURROGATE	1	105%	107%	105%	100%	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27332
Project : E12723/4

Analyte	Lab No	E185417	E185418	E185419		
		CBH105	CBH105	CBH105		
	Sample Id	1.2-1.65	2.4-2.85	4.0-4.45		
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	10%	51%	14%		
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	8	--		
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	--		
C15-C28 Fraction	50	nd	nd	--		
C29-C36 Fraction	50	nd	nd	--		
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	--		
Toluene	1	nd	nd	--		
Ethylbenzene	1	nd	nd	--		
m&p-Xylene	2	nd	nd	--		
o-Xylene	1	nd	nd	--		
4-Bromofluorobenzene-SURROGATE	1	109%	77%	--		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27332

Project : E12723/4

Analyte	Lab No	E185411	E185412	E185414	E185415	E185416
		CBH101	CBH101	CBH103	CBH103	CBH105
	Sample Id	1.0-1.45	1.95-2.4	1.1-1.45	2.2-2.45	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	8	nd	nd	nd	6
Cadmium	0.5	1.2	nd	0.7	nd	0.6
Chromium	5	6	nd	18	5	11
Copper	5	82	nd	44	nd	27
Nickel	2	9	nd	98	nd	9
Lead	5	52	9	9	11	59
Zinc	5	130	14	43	9	91
E5950 Mercury in Soil						
Mercury	0.05	0.10	nd	nd	nd	0.56

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27332
Project : E12723/4

Analyte	Lab No	E185417	E185418			
		CBH105	CBH105			
	Sample Id	1.2-1.65	2.4-2.85			
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	6			
Cadmium	0.5	nd	nd			
Chromium	5	10	22			
Copper	5	6	nd			
Nickel	2	12	7			
Lead	5	24	21			
Zinc	5	30	57			
E5950 Mercury in Soil						
Mercury	0.05	0.16	0.06			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27332

Project : E12723/4

Analyte	Lab No	E185411	E185412	E185414	E185415	E185417
		CBH101	CBH101	CBH103	CBH103	CBH105
	Sample Id	1.0-1.45	1.95-2.4	1.1-1.45	2.2-2.45	1.2-1.65
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	85%	89%	81%	84%	87%
Anthracene-d10-SURROGATE	1	88%	93%	88%	87%	92%
p-Terphenyl-D14-SURROGATE	1	92%	94%	88%	87%	92%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27332
Project : E12723/4

Analyte	Lab No	E185418				
		CBH105				
	Sample Id	2.4-2.85				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				
Total USEPA Priority PAHs	0.5	nd				
2-Fluorobiphenyl-SURROGATE	1	90%				
Anthracene-d10-SURROGATE	1	95%				
p-Terphenyl-D14-SURROGATE	1	97%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27332

Project : E12723/4

Analyte	Lab No	E185414				
		CBH103				
	Sample Id	1.1-1.45				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	nd				
2.4.5.6-TCMX-SURROGATE	1	129				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1071

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27332

Project : E12723/4

Analyte	Lab No	E185414				
		CBH103				
	Sample Id	1.1-1.45				
	PQL					
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				
Total Polychlorinated biphenyl	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref : ASET5759/ 8323 / 1 - 3
Your ref :5E1071
NATA Accreditation No: 14484

17 April 2005

Amdel Laboratories Ltd,
99, Mitchell rd,
Cardiff,
NSW 2285.

Attn:Ms. Julie Edman
Fax No:02 - 4902 4899

Dear Julie,
Asbestos Identification
This report presents the results of three samples, forwarded by Amdel Laboratories Ltd, on 15 April 2005, for analysis for asbestos.

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

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

3. Results : **Sample No. 1. ASET5759 / 8323 / 1. 5E1071 - E185411 - CBH101 - 1.0 - 1.45.**
Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones, fragments of plaster, cement, bitumin and brick.
No asbestos detected.

Sample No. 2. ASET5759 / 8323 / 2. 5E1071 - E185414 - CBH 103 - 1.1 - 1.45.
Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm
The sample consisted of mixture of soil, stones and fragments of plaster, bitumen and cement.
No asbestos detected.

Sample No. 3. ASET5759 / 8323 / 3. 5E1071 - E185417 - CBH 105 - 1.2 - 1.65.
Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm
The sample consisted of mixture of soil, stones and fragments of plaster, cement, bitumin and brick.
No asbestos detected.

Analysed and reported by;

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

NATA Accredited Laboratory Number: 14484.

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements, which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 99 823 960 402
585 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 5899 Fax (03) 9562 0336

Analytical Report

AMDEL ENVIRONMENTAL - SYDNEY
99 Mitchell Road
Cardiff

NSW 2285

Contact	: **BRETT McLENNAM**
Batch Number	: **0503883**
Job Ref	: **5E1071**
Sample(s) Received	: **06/04/2005**
Report No	: **141711**

Methods:

SPOCAS - Acid Nuetralising Capacity (ANCe)#
SPOCAS - Peroxide Oxidisable Sulfur #
SPOCAS - Reacted Calcium #
SPOCAS - Reacted Magnesium #
SPOCAS - Residual Acid Soluble Sulfur #
SPOCAS - Sulfidic Acidity #
SPOCAS Method 23 - TPA, TAA, pH(KCl), pH(ox)#

Attached Results Approved by:

Susan Groth
B.Sc. (Chemistry)
Teamleader - Waters

Anthony Crane
B.App.Sci. (Environmental)
Laboratory Manager

John Levvey
Dip.App.Sci (Chemistry)
Teamleader - Metals

Document may not be reproduced except in full.

**** This is the Final Report which supersedes any reports previously issued relating to the sample(s) included.***
All samples tested as submitted by client.
 # Denotes methods not covered by NATA terms of accreditation

amdel
www.amdel.com
A subsidiary of the Gribbles Group
A.B.N. 96 823 960 402
585 Blackburn Road Notting Hill,
Victoria, Australia 3168
Telephone (03) 9562 8699 Fax (03) 9562 0336

Results

Report No: 141711

	0503883/001
	CBH105/4.0-4.45
	E185419
	Soil
	5/04/05

SUSPENSION POCAS

Method 23 (SPOCAS) Units: As stated

pH (KCl) extract #	7.6
pH (ox) Peroxide Extract #	3.3
Total Actual Acidity #	<5.0
mol H+/t	
Total Potential Acidity #	22.7
mol H+/t	

SUSPENSION POCAS - Peroxide Oxidisable Sulfur

Method 23 (SPOCAS) Units : %

Peroxide Oxidisable Sulfur	0.18
, Spos% #	

SUSPENSION POCAS - Sulfidic Acidity

Method 23 (SPOCAS) Units : mol H+/t

Total Sulfidic Acidity #	18
(Acid trail), mol H+/t	

SUSPENSION POCAS- Acid Nuetralising Capacity

Method 23 (SPOCAS) Units: % CaCO3

Acid Neutralising #	<0.1
Capacity	

SUSPENSION POCAS- Reacted Calcium

Method 23 (SPOCAS) Units : %

Reactive Calcium #	<0.01
Ca_a	

SUSPENSION POCAS- Reacted Magnesium

Method 23 (SPOCAS) Units: %

Reactive Magnesium	<0.01

SUSPENSION POCAS- Residual Acid Soluble Sulfur

Method 23 (SPOCAS) Units %S

Residual Acid Soluble	<0.01
Sulur #	

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1071

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX in Soils done under
NATA Accreditation Number: 14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1071

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1071

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185411)							
C6-C9 Fraction	100	100		104%			
E1221 TPH in Soil (E185411)							
C10-C14 Fraction							
C15-C28 Fraction	550	520		94%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E185411)							
Benzene	10	8.2		82%			
Toluene	10	8		80%			
Ethylbenzene	10	8		81%			
m&p-Xylene	20	15		76%			
o-Xylene	10	8		79%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1071

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	72			72%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	540			97%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	8.4			84%		
Toluene	10	11			110%		
Ethylbenzene	10	10			99%		
m&p-Xylene	20	20			98%		
o-Xylene	10	10			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185411)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E185411)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E185411)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E185411)							
Arsenic	50	49		98%			
Cadmium	50	42		83%			
Chromium	50	50		100%			
Copper	50	42		85%			
Nickel	50	42		84%			
Lead	50	47		94%			
Zinc	50	37		74%			
E5950 Mercury in Soil (E185411)							
Mercury	0.50	0.48		97%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1071

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	47			93%		
Cadmium	50	44			88%		
Chromium	50	48			95%		
Copper	50	45			90%		
Nickel	50	46			91%		
Lead	50	45			90%		
Zinc	50	46			92%		
E5950 Mercury in Soil							
Mercury	0.50	0.47			93%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E185411)								
Arsenic	8	8	8	0%				
Cadmium	0.8	1.2	1.0	39%				
Chromium	5	6	6	18%				
Copper	66	82	74	21%				
Nickel	7	9	8	24%				
Lead	49	52	51	5%				
Zinc	100	130	120	26%				
E5950 Mercury in Soil (E185411)								
Mercury	0.16	0.10	0.13	46%				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E185411)							
Naphthalene	5	4.0		79%			
Acenaphthylene	5	4.2		82%			
Acenaphthene	5	4.0		81%			
Fluorene	5	4.2		82%			
Phenanthrene	5	4.2		83%			
Anthracene	5	4.2		82%			
Fluoranthene	5	4.4		87%			
Pyrene	5	4.4		87%			
Benz(a)anthracene	5	4.2		85%			
Chrysene	5	4.2		83%			
Benzo(b) & (k)fluoranthene	10	8		84%			
Benzo(a)pyrene	5	4.4		89%			
Indeno(1.2.3-cd)pyrene	5	4.4		89%			
Dibenz(a.h)anthracene	5	4.4		86%			
Benzo(g.h.i)perylene	5	4.4		86%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1071

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	3.8			76%		
Acenaphthylene	5	3.8			77%		
Acenaphthene	5	3.8			77%		
Fluorene	5	4.0			78%		
Phenanthrene	5	3.8			78%		
Anthracene	5	4.0			79%		
Fluoranthene	5	4.0			79%		
Pyrene	5	4.0			78%		
Benz(a)anthracene	5	3.6			71%		
Chrysene	5	4.0			79%		
Benzo(b) & (k)fluoranthene	10	8			78%		
Benzo(a)pyrene	5	3.8			74%		
Indeno(1.2.3-cd)pyrene	5	4.0			79%		
Dibenz(a.h)anthracene	5	4.0			80%		
Benzo(g.h.i)perylene	5	4.0			80%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E185411)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			108%		
a-BHC	0.5	0.5			106%		
g-BHC	0.5	0.5			104%		
Heptachlor	0.5	0.5			104%		
Aldrin	0.5	0.5			106%		
b-BHC	0.5	0.5			104%		
d-BHC	0.5	0.5			106%		
Oxychlordane	0.5	0.5			106%		
Heptachlor epoxide	0.5	0.5			106%		
Endosulfan 1	0.5	0.5			106%		
Chlordane-Trans	0.5	0.5			104%		
Chlordane-Cis	0.5	0.5			104%		
trans-Nonachlor	0.5	0.5			104%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			104%		
Endrin	0.5	0.5			106%		
DDD	1	1.2			110%		
Endosulfan 2	0.5	0.5			100%		
DDT	1	0.9			85%		
Endosulfan sulfate	0.5	0.5			94%		
Methoxychlor	0.5	0.4			84%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1071

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1120 Polychlorinated Biphenyls in Soil							
Aroclor 1016	-	--					
Aroclor 1221	-	--					
Aroclor 1232 & 1242 as total	-	--					
Aroclor 1248 & 1254 as total	-	--					
Aroclor 1260 & 1262 as total	10.00	13			125%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway

FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 18/03/05

PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27332
Project:	E12723/4
Our Reference Number :	5E1071
Date Received by Amdel :	18/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	8	
Benzene, Toluene, Ethylbenzene & Xylene	E1010	6	
TPH C6-C9 by Purge & Trap	E1230	6	Amdel's turnaround times
TPH (C10-C36)	E1221	6	are typically 3-5 working
Metals by ICP-AES	E5910	7	days.
Mercury in Soil	E5950	7	
Polycyclic Aromatic Hydrocarbons	E1110	6	
Organochlorine Pesticides	E1080	1	
Polychlorinated Biphenyls in Soil, mg/k E1120		1	
Asbestos	E8110	3	
Acid Sulphate Soils	POCAS	1	
Samples on Hold (Soil)	E7600	2	
Samples on Hold (Water)	E7605	1	
Batch Charge	E7619	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
	WBD16/4	16/03/2005	Amber, 3 vials								
	DUPD6	16/03/2005									
	ALSD6	16/03/2005									
	CBH140 0.0-0.2	17/03/2005		1				1	1	1	
	CBH140 0.5-0.95	17/03/2005									
	CBH140 1.4-1.5	17/03/2005		1				1			
	CBH141 0.0-0.2	17/03/2005									
	CBH141 0.5-0.95	17/03/2005					1	1		1	
	CBH141 1.3-1.75	17/03/2005					1	1			
	CBH142 0.0-0.2	17/03/2005		1				1		1	
	CBH142 0.5-0.7	17/03/2005		1				1			
	CBH143 0.0-0.2	17/03/2005									
	CBH143 0.5-0.6	17/03/2005		1				1		1	
	CBH143 1.7-2.15	17/03/2005		1				1			
	CBH144 0.0-0.2	17/03/2005									
	CBH144 0.5-0.6	17/03/2005		1				1		1	
	CBH144 1.5-1.95	17/03/2005		1				1			
	CBH 9.2-9.65	17/03/2005	CHANGE NAME TO CBH99 9.2-9.65								
	DUP3D	17/03/2005									
	DUP4D	17/03/2005									
	TS D 17/3/05	17/03/2005	VIAL								
	TB D 17/3/05	17/03/2005									
	WB D 17/3/05	17/03/2005									
E 185410	CBH101 0.0-0.2	18/03/2005									
11	CBH101 1.0-1.45	18/03/2005		1				1		1	
12	CBH101 1.5-1.95	18/03/2005	CHANGE NAME TO CBH101 1.95-2.4	1				1			
13	CBH103 0.0-0.2	18/03/2005									
14	CBH103 1.1-1.45	18/03/2005		1				1	1	1	
15	CBH103 2.2-2.45	18/03/2005		1				1			
16	CBH105 0.0-0.2	18/03/2005						1			
17	CBH105 1.2-1.65	18/03/2005		1				1		1	
18	CBH105 2.4-2.85	18/03/2005		1				1			
19	CBH105 4.0-4.45	18/03/2005									1

Received 24 MAR 2005 5E1071

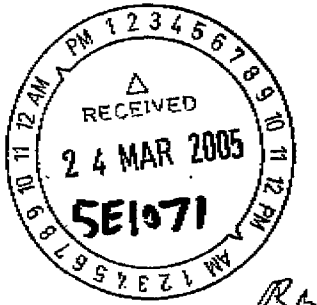
BR - 24/3/05

				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
E1554	WB 18/3	18/03/2005	AMBER, 2 VIALS, PLASTIC								
	CBH102 0.0-0.2	21/03/2005		1				1		1	
	CBH102 1.0-1.45	21/03/2005						1			
	CBH102 2.2-2.45	21/03/2005		1				1			
	CBH104 0.0-0.2	21/03/2005		1				1		1	
	CBH104 1.1-1.2	21/03/2005		1				1			
	CBH106 0.0-0.2	21/03/2005		1				1			
	CBH106 0.5-0.7	21/03/2005		1				1	1	1	
	CBH106 1.4-1.65	21/03/2005		1				1			
	WB 21/3	21/03/2005	AMBER, 2 VIALS, PLASTIC	1	1			1			
	TRIP BLANK SEO831	21/03/2005	AMBER			1					
	TS 050318.04	18/03/2005	VIAL		1						
	DUPD8	21/03/2005		1				1			
	ALSD8	21/03/2005		1				1			
			No. of Analyses	14	2	1	6	52	5	23	2

Br. 24/3/05

	CBH1-6 2.0-2.4	16/03/2005	
	CBH1981 2.8-2.35	16/03/2005	
	CBH899 0.0-0.2	16/03/2005	
	CBH1899 1.2-1.75	16/03/2005	
	CBH899 2.5-2.8	16/03/2005	
	CBH1899 4.35-4.7	16/03/2005	
	WB1D1604	16/03/2005	
	DUP1D6	16/03/2005	
	AL SD6	16/03/2005	
	CBH1L401 0.0-0.2	17/03/2005	1
	CBH1401 0.5-0.95	17/03/2005	
	CBH1401 1.4-1.5	17/03/2005	
	CBH1441 0.0 0.2	17/03/2005	
	CBH1441 0.5-0.95	17/03/2005	
	CBH1441 1.3-1.75	17/03/2005	
	CBH1442 0.0-0.2	17/03/2005	
	CBH1442 0.5-0.9	17/03/2005	
	CBH1443 0.0-0.2	17/03/2005	
	CBH1443 0.5-0.6	17/03/2005	
	CBH1443 1.7-2.15	17/03/2005	
	CBH1444 0.0-0.2	17/03/2005	
	CBH1444 0.5-0.6	17/03/2005	
	CBH1444 1.5-1.95	17/03/2005	
	CBH1 9.2-9.65	17/03/2005	
	DUP3D	17/03/2005	
	DUP4D	17/03/2005	
	TS D 17/3/05	17/03/2005	
	TB D 17/3/05	17/03/2005	
	WB D 17/3/05	17/03/2005	
	CBH1104 0.0 0.2	18/03/2005	
	CBH1101 1.0-1.45	18/03/2005	
	CBH1101 1.5-1.95	18/03/2005	
	CBH1103 0.0-0.2	18/03/2005	
	CBH1103 1.1-1.45	18/03/2005	1
	CBH1103 2.2-2.45	18/03/2005	
	CBH1105 0.0-0.2	18/03/2005	
	CBH1105 1.2-1.65	18/03/2005	
	CBH1005 2.4-2.85	18/03/2005	
	CBH1105 4.0-4.45	18/03/2005	
	WB 18/3	18/03/2005	
	CBH1102 0.0 0.2	21/03/2005	
	CBH1102 1.0-1.45	21/03/2005	
	CBH1102 2.2-2.45	21/03/2005	
	CBH1104 0.0-0.2	21/03/2005	
	CBH1104 1.1-1.2	21/03/2005	
	CBH1106 0.0-0.2	21/03/2005	
	CBH1106 0.5-0.7	21/03/2005	1
	CBH1106 1.4-1.65	21/03/2005	
	WB 21/3	21/03/2005	
	TRIP BLANK SB0831	21/03/2005	
	TS 050318.04	18/03/2005	
	DUP3S	24/03/2005	
	ALS3S	21/03/2005	
			16
			20

E185410



BA
24/3/05

No: 27332

Chain of Custody

Laboratory Quotation / Order No:

Job No: E17723/4 Sheet 1 of 1

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CHRIS WESTCOTT	Consigning Office: SYDNEY Date Dispatched:
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
CHRIS WESTCOTT	18/3/05	9am	Liz Pittock Amdel Cards ff	21/3	2pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
E18540	SOIL	Jar + Ice	CBH101 0.0-0.2	18/3/05					
11			1 1.0-1.9						
12			1 1.5-1.9						
13			CBH103 0.0-0.2						
14			1 1.1-1.9						
15			1 2.2-2.8						
16			CBH105 0.0-0.2						
17			1 1.7-1.65						
18			1 2.4-2.84						
19			1 9.0-9.45						
	WATER (SOIL)	Amber Vial + Z(HCl) Plastic (filtered) + Nitric	WB15/3						
20			WB16/3						
			WB16/3						

HOLD FOR FURTHER INSTRUCTION

10 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1100
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	12
Reference/Order	:	E12723/4/27333
Project	:	E12723/4 AREA D
Received Samples	:	21/03/05 Instructions : 21/03/05
Date Reported	:	13/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1100

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E7500	Moisture (%w/w)	01/04/05	01/04/05	ZSI 096
E1230	TPH C6-C9 by Purge & Trap	01/04/05	13/04/05	MCM 094
E1221	TPH (C10-C36)	01/04/05	02/04/05	GTO 094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	01/04/05	13/04/05	MCM 094
E5910	Metals by ICP-AES	04/04/05	04/04/05	DLU 093
E5950	Mercury in Soil	04/04/05	04/04/05	DLU 093
E1110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA 095
E1080	Organochlorine Pesticides	01/04/05	02/04/05	MFA 095
E1120	Polychlorinated Biphenyls in Soil, mg/kg	01/04/05	02/04/05	MFA 095
E0230	TPH C6-C9 by purge & trap	06/04/05	06/04/05	GTO 094
E0221F	TPH (C10-C36)	31/03/05	01/04/05	GTO 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	07/04/05	07/04/05	MCM 094
E4970	Total Metals by ICP-MS	01/04/05	01/04/05	DLU 093
E4950	Mercury	01/04/05	01/04/05	DLU 093

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1100
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27333
Project : E12723/4 AREA D

Analyte	Lab No	E185848	E185849	E185850	E185851	E185852
		CBH102	CBH102	CBH102	CBH104	CBH104
	Sample Id	0.0-0.2	1.0-1.45	2.2-2.45	0.0-0.2	1.1-1.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	8%	6%	15%	12%	7%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	--	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	--	nd	nd	nd
C15-C28 Fraction	50	nd	--	60	nd	nd
C29-C36 Fraction	50	nd	--	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--	nd	nd	nd
Toluene	1	nd	--	nd	nd	nd
Ethylbenzene	1	nd	--	nd	nd	nd
m&p-Xylene	2	nd	--	nd	nd	nd
o-Xylene	1	nd	--	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	92%	--	91%	86%	83%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27333
Project : E12723/4 AREA D

Analyte	Lab No	E185853	E185854	E185855	E185859	
		CBH106	CBH106	CBH106		
	Sample Id	0.0-0.2	0.5-0.7	1.4-1.65	DUPD8	
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	11%	6%	6%	8%	
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	
C15-C28 Fraction	50	120	nd	nd	nd	
C29-C36 Fraction	50	80	nd	nd	nd	
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	
Toluene	1	nd	nd	nd	nd	
Ethylbenzene	1	nd	nd	nd	nd	
m&p-Xylene	2	nd	nd	nd	nd	
o-Xylene	1	nd	nd	nd	nd	
4-Bromofluorobenzene-SURROGATE	1	77%	100%	98%	89%	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185848	E185849	E185850	E185851	E185852
		CBH102	CBH102	CBH102	CBH104	CBH104
	Sample Id	0.0-0.2	1.0-1.45	2.2-2.45	0.0-0.2	1.1-1.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	16	12	nd	nd
Cadmium	0.5	nd	1.0	nd	nd	nd
Chromium	5	10	5	8	17	nd
Copper	5	16	110	16	14	nd
Nickel	2	10	9	3	8	nd
Lead	5	34	150	60	75	nd
Zinc	5	71	190	57	66	nd
E5950 Mercury in Soil						
Mercury	0.05	0.30	0.28	0.55	0.41	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27333
Project : E12723/4 AREA D

Analyte	Lab No	E185853	E185854	E185855	E185859	
		CBH106	CBH106	CBH106		
	Sample Id	0.0-0.2	0.5-0.7	1.4-1.65	DUPD8	
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	
Cadmium	0.5	nd	nd	nd	nd	
Chromium	5	11	9	nd	10	
Copper	5	23	7	nd	15	
Nickel	2	8	9	nd	8	
Lead	5	43	20	14	31	
Zinc	5	81	21	29	69	
E5950 Mercury in Soil						
Mercury	0.05	0.31	0.05	nd	0.27	

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185848	E185850	E185851	E185852	E185853
		CBH102	CBH102	CBH104	CBH104	CBH106
	Sample Id	0.0-0.2	2.2-2.45	0.0-0.2	1.1-1.2	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	0.6	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	2.2	nd	nd	nd
Pyrene	0.5	nd	2.6	nd	nd	nd
Benz(a)anthracene	0.5	nd	1.6	nd	nd	nd
Chrysene	0.5	nd	1.4	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	3	nd	nd	nd
Benzo(a)pyrene	0.5	nd	2.0	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	1.4	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	1.2	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	16	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	95%	81%	87%	90%	90%
Anthracene-d10-SURROGATE	1	96%	82%	89%	94%	91%
p-Terphenyl-D14-SURROGATE	1	98%	84%	90%	95%	94%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27333
Project : E12723/4 AREA D

Analyte	Lab No	E185854	E185855	E185859		
		CBH106	CBH106			
	Sample Id	0.5-0.7	1.4-1.65	DUPD8		
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd		
Acenaphthylene	0.5	nd	nd	nd		
Acenaphthene	0.5	nd	nd	nd		
Fluorene	0.5	nd	nd	nd		
Phenanthrene	0.5	nd	nd	nd		
Anthracene	0.5	nd	nd	nd		
Fluoranthene	0.5	nd	nd	nd		
Pyrene	0.5	nd	nd	nd		
Benz(a)anthracene	0.5	nd	nd	nd		
Chrysene	0.5	nd	nd	nd		
Benzo(b) & (k)fluoranthene	1	nd	nd	nd		
Benzo(a)pyrene	0.5	nd	nd	nd		
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd		
Dibenz(a.h)anthracene	0.5	nd	nd	nd		
Benzo(g.h.i)perylene	0.5	nd	nd	nd		
Total USEPA Priority PAHs	0.5	nd	nd	nd		
2-Fluorobiphenyl-SURROGATE	1	85%	83%	86%		
Anthracene-d10-SURROGATE	1	86%	86%	88%		
p-Terphenyl-D14-SURROGATE	1	88%	88%	91%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185854				
		CBH106				
	Sample Id	0.5-0.7				
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				
2.4.5.6-TCMX-SURROGATE	1	nd				
2.4.5.6-TCMX-SURROGATE	1	98				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185854				
		CBH106				
	Sample Id	0.5-0.7				
	PQL					
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				
Total Polychlorinated biphenyl	1	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd plus Cover Page

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185856	E185857	E185858		
		WB	TRIP	TS050318		
	Sample Id	21.3.05	BLANK	.04		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	nd	--		
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	nd	--		
C15-C28 Fraction	100	--	nd	--		
C29-C36 Fraction	100	--	nd	--		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	--	2.6		
Toluene	1	nd	--	3		
Ethylbenzene	1	nd	--	2		
m&p-Xylene	2	nd	--	5		
o-Xylene	1	nd	--	2		
4-Bromofluorobenzene-SURROGATE	1	97%	--	98%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No / Sample Id / PQL	E185856 WB 21.3.05				
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	0.005				
Nickel	0.005	nd				
Lead	0.002	0.003				
Zinc	0.01	0.23				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref : ASET5733/ 8286 / 1 - 3
Your ref :5E1100
NATA Accreditation No: 14484

13 April 2005

Amdel Laboratories Ltd,
99, Mitchell rd,
Cardiff,
NSW 2285.

Attn:Ms. Julie Edman
Fax No:02 - 4902 4899

Dear Julie,
This report presents the results of three samples, forwarded by Amdel Laboratories Ltd, on 13 April 2005, for analysis for asbestos.

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

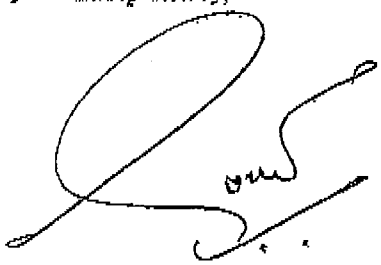
2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy inconjunction with dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET5733 / 8286 / 1. 5E1100 - E185848 - CBH102 - 0.0 - 0.2.**
Approx dimensions 3.5 cm x 3.5 cm x 4.5 cm
The sample consisted of a mixture of sandy soil, stones, fragments of plaster, glass, and brick.
No asbestos detected.

Sample No. 2. ASET5733 / 8286 / 2. 5E1100 - E185851 - CBH 104 - 0.0 0.2.
Approx dimensions 3.5 cm x 3.5 cm x 4.25 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 3. ASET5733 / 8286 / 3. 5E1100 - E185854 - CBH106 - 0.5 - 0.7.
Approx dimensions 3.5 cm x 3.5 cm x 4.25 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

Analysed and reported by,



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

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: aset@bigpond.net.au WEBSITE: aset.com.au

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1100

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for > 10x PQL and < 10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX Soils Done under
NATA Accreditation Number: 14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1100

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1100

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185848)							
C6-C9 Fraction	100	86		86%			
E1221 TPH in Soil (E185848)							
C10-C14 Fraction							
C15-C28 Fraction	550	520		95%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E185848)							
Benzene	10	10		101%			
Toluene	10	9		92%			
Ethylbenzene	10	9		87%			
m&p-Xylene	20	18		88%			
o-Xylene	10	9		93%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	92			92%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			93%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	10			103%		
Toluene	10	9			93%		
Ethylbenzene	10	9			89%		
m&p-Xylene	20	18			88%		
o-Xylene	10	9			93%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E185848)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E185848)								
C10-C14 Fraction	nd	nd						
C15-C28 Fraction	nd	nd						
C29-C36 Fraction	nd	nd						
E1010 BTEX (P&T) in Soil (E185848)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50					
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E185848)							
Arsenic	50	42		83%			
Cadmium	50	39		78%			
Chromium	50	40		81%			
Copper	50	38		76%			
Nickel	50	38		75%			
Lead	50	53		106%			
Zinc	50	43		86%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	46			92%		
Cadmium	50	43			87%		
Chromium	50	47			94%		
Copper	50	44			89%		
Nickel	50	45			90%		
Lead	50	44			89%		
Zinc	50	44			87%		
E5950 Mercury in Soil							
Mercury	0.50	0.47			93%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E185848)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	10	10	10	0%				
Copper	12	16	14	28%				
Nickel	7	10	9	35%				
Lead	24	34	29	34%				
Zinc	60	71	66	16%				
E5950 Mercury in Soil (E185848)								
Mercury	0.28	0.30	0.29	6%				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E185848)							
Naphthalene	5	4.0		80%			
Acenaphthylene	5	4.2		83%			
Acenaphthene	5	4.0		82%			
Fluorene	5	4.2		82%			
Phenanthrene	5	4.2		83%			
Anthracene	5	4.2		83%			
Fluoranthene	5	4.2		85%			
Pyrene	5	4.4		87%			
Benz(a)anthracene	5	4.2		84%			
Chrysene	5	4.2		83%			
Benzo(b) & (k)fluoranthene	10	9		85%			
Benzo(a)pyrene	5	4.4		87%			
Indeno(1.2.3-cd)pyrene	5	4.4		89%			
Dibenz(a.h)anthracene	5	4.4		87%			
Benzo(g.h.i)perylene	5	4.2		86%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	3.8			77%		
Acenaphthylene	5	4.0			79%		
Acenaphthene	5	3.8			77%		
Fluorene	5	3.8			77%		
Phenanthrene	5	3.8			74%		
Anthracene	5	3.8			76%		
Fluoranthene	5	3.8			75%		
Pyrene	5	3.8			75%		
Benz(a)anthracene	5	3.8			75%		
Chrysene	5	3.6			73%		
Benzo(b) & (k)fluoranthene	10	7			72%		
Benzo(a)pyrene	5	3.6			73%		
Indeno(1.2.3-cd)pyrene	5	3.6			74%		
Dibenz(a.h)anthracene	5	3.6			72%		
Benzo(g.h.i)perylene	5	3.6			73%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E185848)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			108%		
a-BHC	0.5	0.5			106%		
g-BHC	0.5	0.5			104%		
Heptachlor	0.5	0.5			104%		
Aldrin	0.5	0.5			106%		
b-BHC	0.5	0.5			104%		
d-BHC	0.5	0.5			106%		
Oxychlordane	0.5	0.5			106%		
Heptachlor epoxide	0.5	0.5			106%		
Endosulfan 1	0.5	0.5			106%		
Chlordane-Trans	0.5	0.5			104%		
Chlordane-Cis	0.5	0.5			104%		
trans-Nonachlor	0.5	0.5			104%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			104%		
Endrin	0.5	0.5			106%		
DDD	1	1.2			110%		
Endosulfan 2	0.5	0.5			100%		
DDT	1	0.9			85%		
Endosulfan sulfate	0.5	0.5			94%		
Methoxychlor	0.5	0.4			84%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1120 Polychlorinated Biphenyls in Soil							
Aroclor 1016	-	--					
Aroclor 1221	-	--					
Aroclor 1232 & 1242 as total	-	--					
Aroclor 1248 & 1254 as total	-	--					
Aroclor 1260 & 1262 as total	10.00	13			125%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	240			120%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	7070			129%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			112%		
Toluene	10	11			111%		
Ethylbenzene	10	11			114%		
m&p-Xylene	20	22			109%		
o-Xylene	10	11			112%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4970 Total Recoverable Metals in Waters							
Arsenic	0.100	0.107			107%		
Cadmium	0.100	0.095			95%		
Chromium	0.100	0.109			109%		
Copper	0.100	0.094			94%		
Nickel	0.100	0.112			112%		
Lead	0.100	0.097			97%		
Zinc	0.100	0.11			112%		
E4950 Total Recoverable Mercury in Water							
Mercury	0.010	0.010			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 21/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27333
Project:	E12723/4
Our Reference Number :	5E1100
Date Received by Amdel :	21/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	9	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	8	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	8	are typically 3-5 working
TPH (C10-C36)	E1221	8	days.
Metals by ICP-AES	E5910	9	
Mercury in Soil	E5950	9	
Polycyclic Aromatic Hydrocarbons	E1110	8	
Organochlorine Pesticides	E1080	2	
Polychlorinated Biphenyls in Soil, mg/k E1120		1	
Asbestos	E8110	3	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	2	
TPH C6-C9 by purge & trap	E0230	1	
TPH (C10-C36)	E0221F	1	
Total Metals by ICP-MS	E4970	1	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 21/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	EJ2723/4/27333
Project:	E12723/4
Our Reference Number :	5E1100
Date Received by Amdel :	21/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Mercury	E4950	1	
Batch Charge	E7619	1	Amdel's turnaround times are typically 3-5 working days.

QCNOTE10

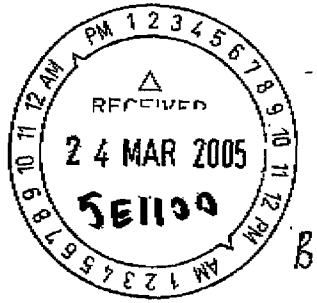
Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
	WB 18/3	18/03/2005	AMBER, 2 VIALS, PLASTIC								
E145348	CBH102 0.0-0.2	21/03/2005		1				1		1	
49	CBH102 1.0-1.45	21/03/2005						1			
50	CBH102 2.2-2.45	21/03/2005		1				1			
51	CBH104 0.0-0.2	21/03/2005		1				1		1	
52	CBH104 1.1-1.2	21/03/2005		1				1			
53	CBH106 0.0-0.2	21/03/2005		1				1			
54	CBH106 0.5-0.7	21/03/2005		1				1	1	1	
55	CBH106 1.4-1.65	21/03/2005		1				1			
56	WB 21/3	21/03/2005	AMBER, 2 VIALS, PLASTIC	1	1			1			
57	TRIP BLANK SEO831	21/03/2005	AMBER			1					
58	TS 050318.04	18/03/2005	VIAL		1						
59	DUPD8	21/03/2005		1				1			
	ALSD8	21/03/2005		1				1			
			No. of Analyses	44	2	1	6	52	5	23	2



BT - 24/3/05

	CBH98 2.0 2.4	16/03/2005	
	CBH98 2 8-2.35	16/03/2005	
	CBH99 0 0-0.2	16/03/2005	
	CBH99 1.2-1.75	16/03/2005	
	CBH99 2.5-2.8	16/03/2005	
	CBH99 4.55 4.7	16/03/2005	
	WBD16/4	16/03/2005	
	DUPD6	16/03/2005	
	ALSD6	16/03/2005	
	CBH140 0.0-0.2	17/03/2005	1
	CBH140 0 5-0.95	17/03/2005	
	CBH140 1.4 1.5	17/03/2005	
	CBH141 0.0 0.2	17/03/2005	
	CBH141 0.5-0.95	17/03/2005	
	CBH141 1.3-1.75	17/03/2005	
	CBH142 0.0-0.2	17/03/2005	
	CBH142 0.5-0.7	17/03/2005	
	CBH143 0-0-0.2	17/03/2005	
	CBH143 0.5-0.6	17/03/2005	
	CBH143 1.7-2.15	17/03/2005	
	CBH144 0.0 0.2	17/03/2005	
	CBH144 0.5 0.6	17/03/2005	
	CBH144 1.5-1.95	17/03/2005	
	CBH144 2.2-2.65	17/03/2005	
	DUP3D	17/03/2005	
	DUP4D	17/03/2005	
	TS D 17/3/05	17/03/2005	
	TB D 17/3/05	17/03/2005	
	WB D 17/3/05	17/03/2005	
	CBH101 0.0-0.2	18/03/2005	
	CBH101 1.0-1.45	18/03/2005	
	CBH101 1.5-1.95	18/03/2005	
	CBH103 0.0-0.2	18/03/2005	
	CBH100 1.1-1.45	18/03/2005	1
	CBH100 2.2-2.45	18/03/2005	
	CBH105 0.0-0.2	18/03/2005	
	CBH105 1.2-1.65	18/03/2005	
	CBH105 2.4-2.85	18/03/2005	
	CBH105 4.0-4.45	18/03/2005	
	WB 18/3	18/03/2005	
	CBH102 0.0-0.2	21/03/2005	
	CBH102 1.0-1.45	21/03/2005	
	CBH102 2.2-2.45	21/03/2005	
	CBH104 0.0-0.2	21/03/2005	
	CBH104 1.1 1.2	21/03/2005	
	CBH106 0.0-0.2	21/03/2005	
	CBH106 0.5-0.7	21/03/2005	1
	CBH106 1.4-1.65	21/03/2005	
	WB 21/3	21/03/2005	
	TRIP BLANK SA0831	21/03/2005	
	TS 050318.01	18/03/2005	
	DUPD8	21/03/2005	
	ALSD8	21/03/2005	

16
20

E185854

Br. 24/3/05

No: 27333

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMPEL	Sampled by: CHRIS WESTACOTT	Consigning Office: SYDNEY Date Dispatched:
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
CHRIS WESTACOTT	21/3/05	4pm		21/3	5.15pm
			K. Askey 8°C	22/3	8am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals:	Sample Condition on Receipt
E1858 48	soil	JAR; ICE	CBH107 0.0-0.2	21/3/05					
9			CBH102 1.0-1.45						
10			" 2.2-2.45						
1			CBH104 0.0-0.2						
2			" 1.1-1.3						
3			CBH105 0.0-0.2						
4			0.5-0.7						
5			1.9-1.65						
6	soil	Plastic	WB 21/3						
		Glass vial x 2	"	"					
		amber	"	"					
7	"	amber	TRIPBLANK 050631	16/3/05					
				"					
8	water	VIAL, HCl	TS050319.04	18/3/05					
9	soil	DUP 08 further →							
	soil	ALS 08 further →							

Special Laboratory Instructions:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Detection Limits:

Turnaround Required:

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1100A
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	12
Reference/Order	:	E12723/4/27333
Project	:	E12723/4 AREA D
Received Samples	:	21/03/05 Instructions : 20/04/05
Date Reported	:	26/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc., Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1100A

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E0230	TPH C6-C9 by purge & trap	20/04/05	20/04/05	GTO 094
E0221F	TPH (C10-C36)	20/04/05	20/04/05	GTO 094
E0110	Polycyclic Aromatic Hydrocarbons	20/04/05	21/04/05	MFA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1100A
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/27333
Project : E12723/4 AREA D

Analyte	Lab No	E185856				
		WB				
	Sample Id	21.3.05				
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd				
C15-C28 Fraction	100	nd				
C29-C36 Fraction	100	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1100A

Client : Coffey Geosciences Pty Ltd

plus Cover Page

Reference : E12723/4/27333

Project : E12723/4 AREA D

Analyte	Lab No	E185856				
		WB				
	Sample Id	21.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	71%				
Anthracene-D10-SURROGATE	1	84%				
p-Terphenyl-D14-SURROGATE	1	84%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1100A

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX Soils Done under
NATA Accreditation Number: 14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1100A

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1100A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	240			120%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	5220			95%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100A

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100A

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			83%		
Acenaphthylene	10	8			84%		
Acenaphthene	10	7			75%		
Fluorene	10	7			74%		
Phenanthrene	10	8			77%		
Anthracene	10	8			79%		
Fluoranthene	10	8			78%		
Pyrene	10	8			78%		
Benz(a)anthracene	10	7			73%		
Chrysene	10	8			82%		
Benzo(b) & (k)fluoranthene	20	16			78%		
Benzo(a)pyrene	10	7			73%		
Indeno(1.2.3-cd)pyrene	10	8			76%		
Dibenz(a.h)anthracene	10	8			79%		
Benzo(g.h.i)perylene	10	9			86%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1100A

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 21/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/27333	
Project:	E12723/4	AREA D
Our Reference Number :	5E1100A	
Date Received by Amdel :	21/03/05	

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
TPH C6-C9 by purge & trap	E0230	1	
TPH (C10-C36)	E0221F	1	Amdel's turnaround times
Polycyclic Aromatic Hydrocarbons	E0110	1	are typically 3-5 working
Australian GST	GST		days.

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)). YES
* Samples received in good condition and appropriately preserved for all tests.
* VOC/SVOC samples were received in teflon lined lids.
* VOC samples were received with Zero Headspace.
* Samples were recieved in sufficient time to allow us to meet holding time requirements.

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

No: 27333

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/14 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No) AMPEL	Sampled by: CHRIS WESTACOTT	Consigning Office: SYDNEY Date Dispatched:
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
CHRIS WESTACOTT	21/3/14	4pm	E. Arsken	21/3 22/3	5.15pm 1pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
E18598	soil	JARS ICE	CBH107 0.0-0.2	21/3/14					
8			CBH107 1.0-1.4						
10			" 2.1-2.4						
1			CBH106 0.0-0.2						
2			" 1.1-1.4						
3			CBH105 0.0-0.2						
4			0.5-0.9						
5			1.9-1.95						
6		Plastic	WB211						
		1 litre acid x 2	"						
		amber	"						
7		amber	TRIP BLANK 350631	18/3/14					
8	water	VIAL HCl	TS05231B.04	18/3/14					
9	soil	DUP06 jar	→						
	soil	BLS06 jar	→						

21 MAR 2014 SE110 A

Special Laboratory Instructions:

Detection Limits:

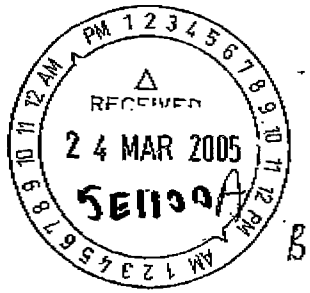
Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

Area D

				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
	WB 18/3	18/03/2005	AMBER, 2 VIALS, PLASTIC		1						
E165948	✓CBH102 0.0-0.2	21/03/2005		1				1		1	
49	✓CBH102 1.0-1.45	21/03/2005						1			
50	✓CBH102 2.2-2.45	21/03/2005		1				1			
51	✓CBH104 0.0-0.2	21/03/2005		1				1		1	
52	✓CBH104 1.1-1.2	21/03/2005		1				1			
53	✓CBH106 0.0-0.2	21/03/2005		1				1			
54	✓CBH106 0.5-0.7	21/03/2005		1				1	1	1	
55	✓CBH106 1.4-1.65	21/03/2005		1				1			
56	✓ WB 21/3	21/03/2005	AMBER, 2 VIALS, PLASTIC	1	1			1			
57	✓TRIP BLANK SEO831	21/03/2005	AMBER			1					
58	✓ TS 050318.04	18/03/2005	VIAL		1						
59	✓ DUPD8	21/03/2005		1				1			
	ALSD8	21/03/2005		1				1			
			No. of Analyses	44	2	1	6	52	5	23	2

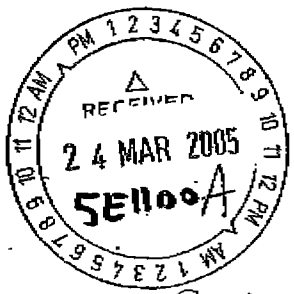


BT · 24/3/05

Area D

	CBII08 2.0-2.4	16/03/2005	
	CBII08 2.8-2.35	16/03/2005	
	CBII09 0.0 0.2	16/03/2005	
	CBII09 1.2-1.75	16/03/2005	
	CBII09 2.3-2.8	16/03/2005	
	CBII09 4.35-4.7	16/03/2005	
	WDIDG/4	16/03/2005	
	DUPDG	16/03/2005	
	ALSDG	16/03/2005	
	CBII140 0.0-0.2	17/03/2005	1
	CBII140 0.5-0.95	17/03/2005	
	CBII140 1.4-1.5	17/03/2005	
	CBII141 0.0-0.2	17/03/2005	
	CBII141 0.5-0.95	17/03/2005	
	CBII141 1.3-1.75	17/03/2005	
	CBII142 0.0 0.2	17/03/2005	
	CBII142 0.5-0.7	17/03/2005	
	CBII143 0.0-0.2	17/03/2005	
	CBII143 0.5-0.6	17/03/2005	
	CBII143 1.9-2.15	17/03/2005	
	CBII144 0.0-0.2	17/03/2005	
	CBII144 0.5-0.6	17/03/2005	
	CBII144 1.5-1.95	17/03/2005	
	CBII 9.2-9.65	17/03/2005	
	DUP3D	17/03/2005	
	DUP4D	17/03/2005	
	TS D 17/3/05	17/03/2005	
	TB D 17/3/05	17/03/2005	
	WB D 17/3/05	17/03/2005	
	CBII130L 0.0-0.2	18/03/2005	
	CBII130L 1.0-1.45	18/03/2005	
	CBII130L 1.5-1.95	18/03/2005	
	CBII103 0.0-0.2	18/03/2005	
	CBII103 1.1-1.45	18/03/2005	1
	CBII103 2.2-2.45	18/03/2005	
	CBII105 0.0-0.2	18/03/2005	
	CBII105 1.2-1.65	18/03/2005	
	CBII105 2.4-2.85	18/03/2005	
	CBII105 4.0-4.45	18/03/2005	
	WD 1B/3	18/03/2005	
	CBII102 0.0 0.2	21/03/2005	
	CBII102 1.0-1.45	21/03/2005	
	CBII102 2.2-2.45	21/03/2005	
	CBII104 0.0-0.2	21/03/2005	
	CBII104 1.1-1.2	21/03/2005	
	CBII106 0.0 0.2	21/03/2005	
	CBII106 0.5-0.7	21/03/2005	1 E186864
	CBII106 1.4-1.65	21/03/2005	
	WD 2/3	21/03/2005	
	TRIP BLANK SEC0851	21/03/2005	
	TS 050318.01	18/03/2005	
	DUP03	21/03/2005	
	ALSD3	21/03/2005	

16
20



Br. 24/3/05

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1120
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	20
Reference/Order	:	E12723/4/31190-1
Project	:	E12723/4 AREA D
Received Samples	:	22/03/05
Instructions	:	30/03/05
Date Reported	:	08/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1120

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio'change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	05/04/05	05/04/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	04/04/05	07/04/05	GTO	094
E1221	TPH (C10-C36)	04/04/05	05/04/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	04/04/05	07/04/05	GTO	094
E5910	Metals by ICP-AES	06/04/05	06/04/05	DLU	093
E5950	Mercury in Soil	04/04/05	07/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	04/04/05	05/04/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186337	E186338	E186339	E186342	E186344
		CTP1	CTP1	CTP2	CTP2	CTP3
	Sample Id	1.0-1.2	1.9-2.2	0.0-0.2	3.0-3.2	1.0-1.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	9%	3%	7%	6%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	20	nd	nd	nd	nd
C15-C28 Fraction	50	720	nd	70	nd	nd
C29-C36 Fraction	50	280	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	95%	98%	98%	95%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186345	E186347	E186348	E186349	E186351
		CTP3	CTP4	CTP4	CTP5	CTP5
	Sample Id	2.0-2.2	1.0-1.2	2.0-2.2	0.0-0.2	2.0-2.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	4%	4%	6%	1%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	60	70	nd
C29-C36 Fraction	50	nd	nd	nd	90	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	90%	88%	89%	95%	97%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186352				
		DUPD13				
	Sample Id	22.3.05				
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	7%				
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	60				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	95%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/31190-1

Project : E12723/4 AREA D

Analyte	Lab No	E186337	E186338	E186339	E186342	E186344
		CTP1	CTP1	CTP2	CTP2	CTP3
	Sample Id	1.0-1.2	1.9-2.2	0.0-0.2	3.0-3.2	1.0-1.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	8	nd	9	8	9
Copper	5	19	nd	18	29	21
Nickel	2	6	nd	6	7	6
Lead	5	67	nd	62	84	96
Zinc	5	98	nd	91	140	140
E5950 Mercury in Soil						
Mercury	0.05	0.13	nd	0.07	0.41	0.14

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186345	E186347	E186348	E186349	E186351
		CTP3	CTP4	CTP4	CTP5	CTP5
	Sample Id	2.0-2.2	1.0-1.2	2.0-2.2	0.0-0.2	2.0-2.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	7	8	13	8	nd
Copper	5	15	25	26	18	nd
Nickel	2	6	6	10	6	nd
Lead	5	59	88	110	59	nd
Zinc	5	83	150	200	94	14
E5950 Mercury in Soil						
Mercury	0.05	0.08	0.14	0.13	0.08	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186352				
		DUPD13				
	Sample Id	22.3.05				
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	10				
Copper	5	30				
Nickel	2	8				
Lead	5	86				
Zinc	5	170				
E5950 Mercury in Soil						
Mercury	0.05	0.21				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/31190-1

Project : E12723/4 AREA D

Analyte	Lab No	E186337	E186338	E186339	E186342	E186344
		CTP1	CTP1	CTP2	CTP2	CTP3
	Sample Id	1.0-1.2	1.9-2.2	0.0-0.2	3.0-3.2	1.0-1.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	2.4	nd	nd	nd	nd
Fluorene	0.5	1.6	nd	nd	nd	nd
Phenanthrene	0.5	15	nd	0.7	nd	0.5
Anthracene	0.5	4.2	nd	nd	nd	nd
Fluoranthene	0.5	25	nd	3.0	0.8	1.8
Pyrene	0.5	24	nd	3.4	1.0	2.0
Benz(a)anthracene	0.5	11	nd	1.8	0.5	1.0
Chrysene	0.5	8.0	nd	1.6	0.5	0.8
Benzo(b) & (k)fluoranthene	1	17	nd	3	1	2
Benzo(a)pyrene	0.5	10	nd	1.8	0.7	1.2
Indeno(1.2.3-cd)pyrene	0.5	6.4	nd	1.2	0.5	0.9
Dibenz(a.h)anthracene	0.5	0.9	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	5.6	nd	1.0	0.5	0.8
Total USEPA Priority PAHs	0.5	130	nd	17	5.6	11
2-Fluorobiphenyl-SURROGATE	1	95%	90%	90%	86%	94%
Anthracene-d10-SURROGATE	1	94%	95%	90%	87%	97%
p-Terphenyl-D14-SURROGATE	1	96%	95%	91%	89%	98%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186345	E186347	E186348	E186349	E186351
		CTP3	CTP4	CTP4	CTP5	CTP5
	Sample Id	2.0-2.2	1.0-1.2	2.0-2.2	0.0-0.2	2.0-2.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.5	0.5	1.2	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	1.2	1.2	3.0	1.8	nd
Pyrene	0.5	1.2	1.4	3.2	1.8	nd
Benz(a)anthracene	0.5	0.7	0.7	1.6	1.0	nd
Chrysene	0.5	0.6	0.7	1.2	0.8	nd
Benzo(b) & (k)fluoranthene	1	1	1	3	2	nd
Benzo(a)pyrene	0.5	0.8	1.0	1.8	1.2	nd
Indeno(1.2.3-cd)pyrene	0.5	0.5	0.6	1.2	0.7	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	0.5	0.6	1.0	0.7	nd
Total USEPA Priority PAHs	0.5	7.2	8.2	17	9.8	nd
2-Fluorobiphenyl-SURROGATE	1	90%	90%	91%	91%	92%
Anthracene-d10-SURROGATE	1	91%	91%	92%	90%	97%
p-Terphenyl-D14-SURROGATE	1	92%	93%	94%	92%	97%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1120
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31190-1
Project : E12723/4 AREA D

Analyte	Lab No	E186352				
		DUPD13				
	Sample Id	22.3.05				
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	0.6				
Anthracene	0.5	nd				
Fluoranthene	0.5	1.4				
Pyrene	0.5	1.6				
Benz(a)anthracene	0.5	0.8				
Chrysene	0.5	0.7				
Benzo(b) & (k)fluoranthene	1	1				
Benzo(a)pyrene	0.5	1.0				
Indeno(1.2.3-cd)pyrene	0.5	0.7				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	0.6				
Total USEPA Priority PAHs	0.5	8.8				
2-Fluorobiphenyl-SURROGATE	1	92%				
Anthracene-d10-SURROGATE	1	92%				
p-Terphenyl-D14-SURROGATE	1	93%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET **AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD**
ABN 36 088 095 112

Our ref: ASET5690/ 8224 / 1 - 5
Your ref: 5E1120
NATA Accreditation No: 14484

8 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of five samples, forwarded by Amdel Laboratories Ltd, on 5 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5690 / 8224 / 1. 5E1120 - CTP1_0.0-0.2 - E186339.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5690 / 8224 / 2. 5E1120 - CTP3_1.0-1.2 - E186344.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of cement and bitumen.
No asbestos detected.

Sample No. 3. ASET5690 / 8224 / 3. 5E1120 - CTP4_2.0-2.2 - E186348.
Approx dimensions 4.0 cm x 4.0 cm x 4.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 4. ASET5690 / 8224 / 4. 5E1120 - CTP5_0.0-0.2 - E186349.
Approx dimensions 4.0 cm x 4.0 cm x 2.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 ~ P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

ASET

Sample No. 5. ASET5690 / 8224 / 5. 5E1120 - CTP1_pacm_1.0 - E186353.
Approx dimensions 4.0 cm x 4.0 cm x 3.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

NATA Accredited Laboratory
Number: 14684.

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1120

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1120

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1120

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E186337)							
C6-C9 Fraction	100	110		108%			
E1221 TPH in Soil (E186337)							
C10-C14 Fraction							
C15-C28 Fraction	550	400		71%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E186337)							
Benzene	10	11		109%			
Toluene	10	11		107%			
Ethylbenzene	10	10		100%			
m&p-Xylene	20	20		98%			
o-Xylene	10	10		104%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1120

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	100			104%		
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	520			94%		
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	11			106%		
Toluene	10	11			105%		
Ethylbenzene	10	10			98%		
m&p-Xylene	20	19			97%		
o-Xylene	10	10			104%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1120

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E186337,E186338)								
C6-C9 Fraction	nd	nd			nd	nd		
E1221 TPH in Soil (E186337,E186338)								
C10-C14 Fraction	20	20	20	0%	nd	nd		
C15-C28 Fraction	700	720	720	2%	nd	nd		
C29-C36 Fraction	280	280	280	0%	nd	nd		
E1010 BTEX (P&T) in Soil (E186337,E186338)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd				
E1221 TPH in Soil						
C10-C14 Fraction	10	nd				
C15-C28 Fraction	50	nd				
C29-C36 Fraction	50	nd				
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1120

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E186337)							
Arsenic	50	55		111%			
Cadmium	50	50		100%			
Chromium	50	52		104%			
Copper	50	51		103%			
Nickel	50	49		99%			
Lead	50	45		90%			
Zinc	50	50		100%			
E5950 Mercury in Soil (E186337)							
Mercury	0.50	0.37		74%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1120

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	54			108%		
Cadmium	50	51			101%		
Chromium	50	53			106%		
Copper	50	53			105%		
Nickel	50	51			102%		
Lead	50	51			103%		
Zinc	50	48			96%		
E5950 Mercury in Soil							
Mercury	0.50	0.40			81%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1120

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E186337,E186338)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	8	8	8	0%	nd	nd		
Copper	22	19	21	14%	nd	nd		
Nickel	13	6	10	73%	nd	nd		
Lead	74	67	71	9%	nd	nd		
Zinc	110	98	100	11%	nd	nd		
E5950 Mercury in Soil (E186338,E186337)								
Mercury	nd	nd			0.11	0.13	0.12	16%

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd				
Cadmium	0.5	nd				
Chromium	5	nd				
Copper	5	nd				
Nickel	2	nd				
Lead	5	nd				
Zinc	5	nd				
E5950 Mercury in Soil						
Mercury	0.05	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1120

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E186337)							
Naphthalene	5	5.0		102%			
Acenaphthylene	5	6.0		121%			
Acenaphthene	5	4.8		98%			
Fluorene	5	5.2		105%			
Phenanthrene	5	5.2		104%			
Anthracene	5	5.2		104%			
Fluoranthene	5	4.8		94%			
Pyrene	5	5.2		106%			
Benz(a)anthracene	5	6.0		120%			
Chrysene	5	4.6		94%			
Benzo(b) & (k)fluoranthene	10	10		102%			
Benzo(a)pyrene	5	6.2		123%			
Indeno(1.2.3-cd)pyrene	5	6.2		123%			
Dibenz(a.h)anthracene	5	5.4		109%			
Benzo(g.h.i)perylene	5	5.4		107%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1120

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	3.8			78%		
Acenaphthylene	5	4.0			80%		
Acenaphthene	5	4.0			78%		
Fluorene	5	4.0			80%		
Phenanthrene	5	3.8			78%		
Anthracene	5	4.0			79%		
Fluoranthene	5	4.0			79%		
Pyrene	5	4.0			80%		
Benz(a)anthracene	5	3.8			75%		
Chrysene	5	3.8			77%		
Benzo(b) & (k)fluoranthene	10	8			80%		
Benzo(a)pyrene	5	4.0			79%		
Indeno(1.2.3-cd)pyrene	5	3.8			78%		
Dibenz(a.h)anthracene	5	3.8			74%		
Benzo(g.h.i)perylene	5	4.0			81%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1120

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E186337,E186338)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	2.2	2.4	2.4	8%	nd	nd		
Fluorene	1.4	1.6	1.6	13%	nd	nd		
Phenanthrene	13	15	14	14%	nd	nd		
Anthracene	4.0	4.2	4.2	4%	nd	nd		
Fluoranthene	23	25	24	8%	nd	nd		
Pyrene	22	24	23	8%	nd	nd		
Benz(a)anthracene	9.6	11	10	13%	nd	nd		
Chrysene	7.6	8.0	7.8	5%	nd	nd		
Benzo(b) & (k)fluoranthene	16	17	17	6%	nd	nd		
Benzo(a)pyrene	10	10	10	0%	nd	nd		
Indeno(1.2.3-cd)pyrene	6.2	6.4	6.4	3%	nd	nd		
Dibenz(a.h)anthracene	1.0	0.9	1.0	10%	nd	nd		
Benzo(g.h.i)perylene	5.4	5.6	5.6	3%	nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd				
Acenaphthylene	0.5	nd				
Acenaphthene	0.5	nd				
Fluorene	0.5	nd				
Phenanthrene	0.5	nd				
Anthracene	0.5	nd				
Fluoranthene	0.5	nd				
Pyrene	0.5	nd				
Benz(a)anthracene	0.5	nd				
Chrysene	0.5	nd				
Benzo(b) & (k)fluoranthene	1	nd				
Benzo(a)pyrene	0.5	nd				
Indeno(1.2.3-cd)pyrene	0.5	nd				
Dibenz(a.h)anthracene	0.5	nd				
Benzo(g.h.i)perylene	0.5	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 22/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/31190-1
Project:	E12723/4 AREA D
Our Reference Number :	5E1120
Date Received by Amdel :	22/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	11	
Benzene,Toluene,Ethylbenzene & Xylene	E1010	11	Amdel's turnaround times
TPH C6-C9 by Purge & Trap	E1230	11	are typically 3-5 working
TPH (C10-C36)	E1221	11	days.
Metals by ICP-AES	E5910	11	
Mercury in Soil	E5950	11	
Polycyclic Aromatic Hydrocarbons	E1110	11	
Asbestos	E8110	5	
Samples on Hold (Soil)	E7600	7	
Samples on Hold (Water)	E7605	2	

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

E186336

Area	Sample ID	Date Collected	COMMENTS	Analysis								
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	PCB	Asbestos	SPOCAS
Area D	CTP1 0.0-0.2	22/03/2005										
37	CTP1-1.0-1.2	22/03/2005		1				1				
38	CTP1-1.9-2.2	22/03/2005		1				1				
53	PACM CTP1-1.0	22/03/2005	fibre								1	
39	CTP2 0.0-0.2	22/03/2005		1				1				
40	CTP2 1.0-1.2	22/03/2005										
41	CTP2 2.0-2.2	22/03/2005										
42	CTP2-3.0-3.2	22/03/2005		1				1				
43	CTP3 0.0-0.2	22/03/2005		1								
44	CTP3 1.0-1.2	22/03/2005		1				1			1	
45	CTP3 2.0-2.2	22/03/2005		1								
46	CTP4 0.0-0.2	22/03/2005										
47	CTP4 1.0-1.2	22/03/2005		1				1				
48	CTP4 2.0-2.2	22/03/2005		1				1			1	
49	CTP5 0.0-0.2	22/03/2005		1								
50	CTP5 1.0-1.2	22/03/2005										
51	CTP5 2.0-2.2	22/03/2005						1				
52	DUP D13	22/03/2005		1				1				
	CTP6 0.0-0.2	23/03/2005		1				1			1	
	CTP6 0.5-0.8	23/03/2005		1				1				
	CTP7 0.0-0.2	23/03/2005		1				1				
	CTP7 0.5-0.6	23/03/2005		1				1				
	CTP8 0.0-0.2	23/03/2005		1				1			1	
	CTP8 0.8-1.0	23/03/2005		1				1				
	CTP10 0.0-0.1	23/03/2005		1								
	CTP10 0.5-0.7	23/03/2005		1				1			1	
	CTP10 1.2-1.4	23/03/2005										
	CTP10 2.0-2.2	23/03/2005		1				1				
	CTP11 0.0-0.2	23/03/2005		1				1				
	CTP11 0.3-0.4	23/03/2005										
	CTP11 0.5-0.6	23/03/2005		1				1			1	
	CTP11 2.0-2.2	23/03/2005		1				1				
	CTP11 2.5-2.7	23/03/2005										
	CTP12 0.0-0.2	23/03/2005		1				1				
	CTP12 1.0-1.2	23/03/2005		1				1			1	
	CTP12 2.8-3.0	23/03/2005		1				1				

RECEIVED
30 APR 2005
5E1120

Area	Sample ID	Date Collected	COMMENTS	Analysis								
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	PCB	Asbestos	SPOCAS
	DUP-D15	23/03/2005										
E1865 54	TS D 22/3/05	23/03/2005										
55	TB D 22/3/05	23/03/2005										
	CTP13 0.0-0.2	24/03/2005										
	CTP13 0.4-0.6	24/03/2005										
	CTP13 0.7-0.9	24/03/2005										
	CTP14 0.0-0.2	24/03/2005										
	CTP14 1.0-1.2	24/03/2005										
	CTP14 1.3-1.4	24/03/2005										
	CTP14 2.0-2.2	24/03/2005										
	CTP15 0.0-0.2	24/03/2005										
	CTP15 1.0-1.2	24/03/2005										
	CTP15 1.4-1.6	24/03/2005										
	CTP15 1.6-1.8	24/03/2005										
	CTP15 1.8-2.2	24/03/2005										
	CTP16 0.0-0.2	24/03/2005										
	CTP16 1.0-1.2	24/03/2005										
	CTP16 1.8-1.7	24/03/2005										
	CTP17 0.0-0.2	24/03/2005										
	CTP17 1.0-1.2	24/03/2005										
	CTP17 2.0-2.2	24/03/2005										
	PACM CTP17 1.7	24/03/2005	Fabric									
	CTP17 3.0-3.2	24/03/2005										
	CTP17 3.8-4.0	24/03/2005										
	CTP18 0.0-0.2	24/03/2005										
	CTP18 0.3-0.4	24/03/2005										
	CTP18 1.0-1.2	24/03/2005										
	CTP19 0.0-0.2	24/03/2005										
	CTP19 0.2-0.4	24/03/2005										
	CTP19 1.0-1.2	24/03/2005										
	DUP-D17	24/03/2005										
	TS-D 22/3/05	23/03/2005										
	TB D 22/3/05	23/03/2005										
			No. of Analyses	35	2	0	3	38	3	3	19	0

RECEIVED
30 APR 2005
SEMD

AREA D

No: 31191

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 2 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Gilks	Consigning Office: SYD Date Dispatched: 22/3/05
Attention: JULIE EDMON	Project Manager: ANNE NORTHWAY (report results to)	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gilks	22/3/05	4pm	Emily T.	22/3	9.30
			K. Dyster	23/3	1pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
E186353.	Soil	Glass Unpreserved	DUP D14	22/3/05	SEND TO AES				
E186353 S4.		plastic bag	CTP1 PACM 1.0						
S4 S5			TS D 22/3/05		HOLD AND WAIT FOR INSTRUCTIONS				
S5 S6			TB D 22/3/05						

22 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

AREA D

No: 31190

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL

Sampled by: Adam Gillis

Consigning Office: SYD

Date Dispatched: 22/3/05

Attention: JULIE EDMON

Project Manager: ANNE NORTHWAY (report results to)

Courier Service:

Consignment Note No:

Relinquished by: Adam Gillis / Adam Gillis

Date: 22/3/05 Time: 4pm

Received by: Barry Yan / K Burston

Date: 22/3 23/3 Time: 7:30 1pm

14°C

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	NAHs + BTEX	Metals	Analyses Required	Sample Condition on Receipt
E186336	Soil	Glass Unpreserved	CTP1 0.0-0.2	22/3/05						
37			" 1.0-1.2							
38			" 1.9-2.2							
39			CTP2 0.0-0.2						HOLD AND WAIT FOR INSTRUCTIONS	
40			" 1.0-1.2							
41			" 2.0-2.2							
42			" 3.0-3.2							
43			CTP3 0.0-0.2							
44			" 1.0-1.2							
45			" 2.0-2.2							
46			CTP4 0.0-0.2							
47			" 1.0-1.2							
48			" 2.0-2.2							
49			CTP5 0.0-0.2							
50			CTP5 1.0-1.2							
51			" 2.0-2.2							
52			DUP 01B							

22 MAR 2005

Special Laboratory Instructions:

Turnaround Required:

Detection Limits:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

WHITE: To accompany samples to Investigation Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1121
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	8
Reference/Order	:	E12723/4/31193
Project	:	E12723/4
Received Samples	:	22/03/05
Instructions	:	22/03/05
Date Reported	:	05/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc., Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1121

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E0230	TPH C6-C9 by purge & trap	31/03/05	31/03/05	GTO	094
E0221F	TPH (C10-C36)	01/04/05	02/04/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	31/03/05	31/03/05	GTO	094
E4970	Total Metals by ICP-MS	30/03/05	30/03/05	DLU	093
E4950	Mercury	30/03/05	30/03/05	DLU	093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA	095
E2770	TKN	02/04/05	04/04/05	PKE	101
E2640	Phosphorus-Total	02/04/05	04/04/05	PKE	101
E2570	Total Nitrogen	05/04/05	05/04/05	PKE	101
E2550	Nitrate-N	31/03/05	31/03/05	PKE	101
E2560	Nitrite-N	31/03/05	31/03/05	PKE	101
E2330	Ammonia as N	30/03/05	30/03/05	PKE	101

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1121
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31193
Project : E12723/4

	Lab No	E186330	E186331	E186332	E186333	E186334
		MW1	MW2	MW5	MW11	MW14
Analyte	Sample Id	22.3.05	22.3.05	22.3.05	22.3.05	22.3.05
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	nd	nd	nd	nd
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	nd	nd	nd	nd
C15-C28 Fraction	100	246	nd	nd	nd	nd
C29-C36 Fraction	100	187	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	94%	97%	90%	91%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31193
Project : E12723/4

Analyte	Lab No	E186335				
		DUP1				
	Sample Id	22.3.05				
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd				
C15-C28 Fraction	100	nd				
C29-C36 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	85%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/31193

Project : E12723/4

Analyte	Lab No	E186330	E186331	E186332	E186333	E186334
		MW1	MW2	MW5	MW11	MW14
	Sample Id	22.3.05	22.3.05	22.3.05	22.3.05	22.3.05
	PQL					
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	0.008	0.008	0.004	0.003	0.004
Cadmium	0.0005	nd	nd	nd	nd	nd
Chromium	0.005	0.006	nd	nd	nd	nd
Copper	0.005	nd	0.011	nd	nd	nd
Nickel	0.005	nd	nd	nd	0.007	nd
Lead	0.002	0.067	0.015	0.002	0.030	0.009
Zinc	0.01	0.08	0.04	nd	0.73	0.01
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31193
Project : E12723/4

Analyte	Lab No / Sample Id / PQL	E186335 DUP1 22.3.05				
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	0.006				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/31193

Project : E12723/4

Analyte	Lab No	E186330	E186331	E186332	E186333	E186334
		MW1	MW2	MW5	MW11	MW14
	Sample Id	22.3.05	22.3.05	22.3.05	22.3.05	22.3.05
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	nd	nd	nd	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	nd	nd	nd	nd
Fluorene	1	nd	nd	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	79%	75%	72%	70%	70%
Anthracene-D10-SURROGATE	1	83%	81%	79%	81%	77%
p-Terphenyl-D14-SURROGATE	1	86%	83%	80%	83%	79%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31193
Project : E12723/4

Analyte	Lab No	E186335				
		DUP1				
	Sample Id	22.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	80%				
Anthracene-D10-SURROGATE	1	84%				
p-Terphenyl-D14-SURROGATE	1	86%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/31193

Project : E12723/4

Analyte	Lab No	E186330	E186331	E186332	E186333	E186334
		MW1	MW2	MW5	MW11	MW14
	Sample Id	22.3.05	22.3.05	22.3.05	22.3.05	22.3.05
	PQL					
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	6.6	1.4	2.0	5.0	2.6
E2640 Total Phosphorus in Water						
Phosphorus	0.02	0.45	0.27	0.02	0.61	0.13
Total Nitrogen	0.1	6.6	6.6	5.4	5.0	2.6
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd	5.13	3.46	nd	nd
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd	nd	nd	nd	nd
E2330 Ammonia as N in Water						
Ammonia as N	0.01	5.83	nd	0.06	0.06	1.14

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1121
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/31193
Project : E12723/4

Analyte	Lab No	E186335				
		DUP1				
	Sample Id	22.3.05				
	PQL					
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	1.4				
E2640 Total Phosphorus in Water						
Phosphorus	0.02	0.03				
Total Nitrogen	0.1	4.4				
E2550 Nitrate as N in Water						
Nitrate as N	0.02	3.17				
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd				
E2330 Ammonia as N in Water						
Ammonia as N	0.01	0.04				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1121

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes
Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1121

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1121

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0230 TPH in Water by P&T/GC-MS (ug/L) (E186330)							
C6-C9 Fraction	200	ISM					
E0221 TPH in Water (ug/L) (E186330)							
C15-C28 Fraction	5500	ISM					
E0010 BTEX (P&T) in Water (ug/L) (E186330)							
Benzene	10	ISM					
Toluene	10	ISM					
Ethylbenzene	10	ISM					
m&p-Xylene	20	ISM					
o-Xylene	10	ISM					

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1121

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	180			91%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	5060			92%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	9.8			98%		
Toluene	10	9			94%		
Ethylbenzene	10	9			86%		
m&p-Xylene	20	18			91%		
o-Xylene	10	10			96%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0230 TPH in Water by P&T/GC-MS (ug/L) (E186330)								
C6-C9 Fraction	ISD	nd						
E0221 TPH in Water (ug/L) (E186330)								
C15-C28 Fraction	ISD	246						
E0010 BTEX (P&T) in Water (ug/L) (E186330)								
Benzene	ISD	nd						
Toluene	ISD	nd						
Ethylbenzene	ISD	nd						
m&p-Xylene	ISD	nd						
o-Xylene	ISD	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E4970 Total Recoverable Metals in Waters	(E186330)						
Arsenic	0.100	0.109		109%			
Cadmium	0.100	0.11		113%			
Chromium	0.100	0.099		99%			
Copper	0.100	0.100		100%			
Nickel	0.100	0.102		102%			
Lead	0.100	0.117		117%			
Zinc	0.100	0.12		115%			
E4950 Total Recoverable Mercury in Water	(E186330)						
Mercury	0.01	0.009		90%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1121

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4970 Total Recoverable Metals in Waters							
Arsenic	0.100	0.105			105%		
Cadmium	0.100	0.11			109%		
Chromium	0.100	0.097			97%		
Copper	0.100	0.102			102%		
Nickel	0.100	0.098			98%		
Lead	0.100	0.105			105%		
Zinc	0.100	0.12			117%		
E4950 Total Recoverable Mercury in Water							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E4970 Total Recoverable Metals in Waters (E186330)								
Arsenic	0.003	0.008	0.006	90%				
Cadmium	nd	nd						
Chromium	nd	0.006	0.006					
Copper	nd	nd						
Nickel	nd	nd						
Lead	0.066	0.067	0.067	1%				
Zinc	0.08	0.08	0.08	0%				
E4950 Total Recoverable Mercury in Water (E186330)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4970 Total Recoverable Metals in Waters						
Arsenic	0.002	nd				
Cadmium	0.0005	nd				
Chromium	0.005	nd				
Copper	0.005	nd				
Nickel	0.005	nd				
Lead	0.002	nd				
Zinc	0.01	nd				
E4950 Total Recoverable Mercury in Water						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E186330)							
Naphthalene	10	ISM					
Acenaphthylene	10	ISM					
Acenaphthene	10	ISM					
Fluorene	10	ISM					
Phenanthrene	10	ISM					
Anthracene	10	ISM					
Fluoranthene	10	ISM					
Pyrene	10	ISM					
Benz(a)anthracene	10	ISM					
Chrysene	10	ISM					
Benzo(b) & (k)fluoranthene	20	ISM					
Benzo(a)pyrene	10	ISM					
Indeno(1.2.3-cd)pyrene	10	ISM					
Dibenz(a.h)anthracene	10	ISM					
Benzo(g.h.i)perylene	10	ISM					

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1121

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			81%		
Acenaphthylene	10	8			83%		
Acenaphthene	10	8			83%		
Fluorene	10	8			84%		
Phenanthrene	10	9			85%		
Anthracene	10	8			82%		
Fluoranthene	10	9			88%		
Pyrene	10	9			88%		
Benz(a)anthracene	10	8			81%		
Chrysene	10	9			88%		
Benzo(b) & (k)fluoranthene	20	17			86%		
Benzo(a)pyrene	10	8			83%		
Indeno(1.2.3-cd)pyrene	10	8			81%		
Dibenz(a.h)anthracene	10	8			79%		
Benzo(g.h.i)perylene	10	9			86%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E186330)								
Naphthalene	ISD	nd						
Acenaphthylene	ISD	nd						
Acenaphthene	ISD	nd						
Fluorene	ISD	nd						
Phenanthrene	ISD	nd						
Anthracene	ISD	nd						
Fluoranthene	ISD	nd						
Pyrene	ISD	nd						
Benz(a)anthracene	ISD	nd						
Chrysene	ISD	nd						
Benzo(b) & (k)fluoranthene	ISD	nd						
Benzo(a)pyrene	ISD	nd						
Indeno(1.2.3-cd)pyrene	ISD	nd						
Dibenz(a.h)anthracene	ISD	nd						
Benzo(g.h.i)perylene	ISD	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E2770 Kjeldahl Nitrogen in Water							
Kjeldahl Nitrogen	1	1.0			103%		
E2640 Total Phosphorus in Water							
Phosphorus	0.40	0.41			102%		
E2550 Nitrate as N in Water							
Nitrate as N	1.0	1.04			104%		
E2560 Nitrite as N in Water							
Nitrite as N	1.0	1.04	1.04		104%	104%	
E2330 Ammonia as N in Water							
Ammonia as N	1.0	1.05	1.04		105%	104%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1121

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E2770 Kjeldahl Nitrogen in Water (E186330)								
Kjeldahl Nitrogen	6.6	6.6	6.6	0%				
E2640 Total Phosphorus in Water (E186330)								
Phosphorus	0.27	0.45	0.36	49%				
E2550 Nitrate as N in Water (E186330)								
Nitrate as N	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	nd				
E2640 Total Phosphorus in Water						
Phosphorus	0.02	nd				
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd				
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd				
E2330 Ammonia as N in Water						
Ammonia as N	0.01	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 22/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/31193
Project:	E12723/4
Our Reference Number :	5E1121
Date Received by Amdel :	22/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	6	
TPH C6-C9 by purge & trap	E0230	6	Amdel's turnaround times
TPH (C10-C36)	E0221F	6	are typically 3-5 working
Benzene, Toluene, Ethylbenzene & Xylene	E0010	6	days.
Total Metals by ICP-MS	E4970	6	
Mercury	E4950	6	
TKN	E2770	6	
Phosphorus-Total	E2640	6	
Total Nitrogen	E2570	6	
Nitrate-N	E2550	6	
Nitrite-N	E2560	6	
Ammonia as N	E2330	6	
Samples on Hold (Soil)	E7600	1	

Extra sample x5

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

Area D

No: 31193

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Ampel, North Ryde	Sampled by: Glenn Harris	Consigning Office: Sydney, Lane Cove West Date Dispatched:
Attention:	Project Manager: (report results to) Anne Northway	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Emily Yu	22/3	7.30
			K Nolan	23/3	1pm
			12.50		

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals (X)	TKN	Total P	Nitrate as total N	Ammonia	Sample Condition on Receipt
E186330	Water		MW1	22/3/05	X	X	X	X	X	X	X	X	
31			MW2		X	X	X	X	X	X	X	X	
32			MW5		X	X	X	X	X	X	X	X	
33			MW11		X	X	X	X	X	X	X	X	
34			MW14		X	X	X	X	X	X	X	X	
35			Dup 1		X	X	X	X	X	X	X	X	
			MS										
E186742 35			MW1	23/3/05	- received 23/3/05 - on hold								

22 MAR 2005

Special Laboratory Instructions: Analysis, PAH, TPH, BTEX, Metals: 8, TKN, Total P and Nitrate & Nitrite as total N, Ammonia

Detection Limits: Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1147
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	7
Reference/Order	:	E12723/4/COC#31196
Project	:	E12723/4
Received Samples	:	23/03/05
Instructions	:	23/03/05
Date Reported	:	15/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1147

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E0230	TPH C6-C9 by purge & trap	07/04/05	07/04/05	JMC 094
E0221F	TPH (C10-C36)	01/04/05	02/04/05	MCM 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	07/04/05	07/04/05	JMC 094
E4870	Dissolved Metals by ICP-MS	31/03/05	31/03/05	DLU 093
E4850	Mercury	31/03/05	31/03/05	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1147
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/COC#31196
Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	60	20	70	20
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	40	nd	260	nd
C15-C28 Fraction	100	nd	nd	nd	nd	nd
C29-C36 Fraction	100	nd	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	49	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	9	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	3	nd
4-Bromofluorobenzene-SURROGATE	1	87%	85%	101%	129%	115%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/COC#31196
Project : E12723/4

Analyte	Lab No	E186727	E186728			
		TB	TS			
	Sample Id	23.03.05	23.03.05			
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	--			
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	--			
C15-C28 Fraction	100	--	--			
C29-C36 Fraction	100	--	--			
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	10			
Toluene	1	nd	9			
Ethylbenzene	1	nd	8			
m&p-Xylene	2	nd	16			
o-Xylene	1	nd	9			
4-Bromofluorobenzene-SURROGATE	1	119%	94%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31196

Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.008	0.002	0.001	nd	0.007
Cadmium	0.0001	0.0010	0.0003	nd	nd	0.0009
Chromium	0.001	0.001	0.004	0.001	0.002	0.001
Copper	0.001	nd	nd	0.001	nd	nd
Nickel	0.001	0.018	0.005	nd	0.002	0.019
Lead	0.001	0.026	0.009	0.021	nd	0.024
Zinc	0.002	0.038	0.036	0.010	0.028	0.053
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31196

Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	3	nd	65	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	5	nd	9	nd
Fluorene	1	nd	1	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	9	nd	74	nd
2-Fluorobiphenyl-SURROGATE	1	78%	70%	78%	73%	74%
Anthracene-D10-SURROGATE	1	89%	76%	84%	81%	82%
p-Terphenyl-D14-SURROGATE	1	91%	78%	85%	82%	83%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1147
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	7
Reference/Order	:	E12723/4/COC#31196
Project	:	E12723/4
Received Samples	:	23/03/05
Instructions	:	23/03/05
Date Reported	:	15/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1147

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E0230	TPH C6-C9 by purge & trap	07/04/05	07/04/05	JMC 094
E0221F	TPH (C10-C36)	01/04/05	02/04/05	MCM 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	07/04/05	07/04/05	JMC 094
E4870	Dissolved Metals by ICP-MS	31/03/05	31/03/05	DLU 093
E4850	Mercury	31/03/05	31/03/05	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1147
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/COC#31196
Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	60	20	70	20
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	40	nd	260	nd
C15-C28 Fraction	100	nd	nd	nd	nd	nd
C29-C36 Fraction	100	nd	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	49	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	9	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	3	nd
4-Bromofluorobenzene-SURROGATE	1	87%	85%	101%	129%	115%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/COC#31196
Project : E12723/4

Analyte	Lab No	E186727	E186728			
		TB	TS			
	Sample Id	23.03.05	23.03.05			
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	--			
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	--			
C15-C28 Fraction	100	--	--			
C29-C36 Fraction	100	--	--			
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	10			
Toluene	1	nd	9			
Ethylbenzene	1	nd	8			
m&p-Xylene	2	nd	16			
o-Xylene	1	nd	9			
4-Bromofluorobenzene-SURROGATE	1	119%	94%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31196

Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.008	0.002	0.001	nd	0.007
Cadmium	0.0001	0.0010	0.0003	nd	nd	0.0009
Chromium	0.001	0.001	0.004	0.001	0.002	0.001
Copper	0.001	nd	nd	0.001	nd	nd
Nickel	0.001	0.018	0.005	nd	0.002	0.019
Lead	0.001	0.026	0.009	0.021	nd	0.024
Zinc	0.002	0.038	0.036	0.010	0.028	0.053
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1147

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31196

Project : E12723/4

Analyte	Lab No	E186722	E186723	E186724	E186725	E186726
		MW7	MW8	MW9	MW10	DUP2
	Sample Id	23.03.05	23.03.05	23.03.05	23.03.05	23.03.05
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	3	nd	65	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	5	nd	9	nd
Fluorene	1	nd	1	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	9	nd	74	nd
2-Fluorobiphenyl-SURROGATE	1	78%	70%	78%	73%	74%
Anthracene-D10-SURROGATE	1	89%	76%	84%	81%	82%
p-Terphenyl-D14-SURROGATE	1	91%	78%	85%	82%	83%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 23/03/05 PAGES: 1 of 2

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/COC#31196
Project:	E12723/4
Our Reference Number :	5E1147
Date Received by Amdel :	23/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	5	
TPH C6-C9 by purge & trap	E0230	5	Amdel's turnaround times
TPH (C10-C36)	E0221F	5	are typically 3-5 working
Benzene,Toluene,Ethylbenzene & Xylene	E0010	7	days.
Dissolved Metals by ICP-MS	E4870	5	
Mercury	E4850	5	

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

Area B

No: 31196

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Amdel, Cardif	Sampled by: Glenn Harris 0429 121 594	Consigning Office: Sydney, Lane Cove West Date Dispatched:
Attention:	Project Manager: (report results to) Anne Northway	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			samples – Liz Pritchard (Amdel Cardiff)	23/3/05	6PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals											Sample Condition on Receipt
E186722	Water	Glass / Plastic	MW7 1L+pG 1FM 2V	23/3/05	X	X	X	X											
23		Vial + Ice.	MW8 2L+pG 2V		X	X	X	X	* metals bottle to be dropped off on 24/3/5										
24			MW9 1L+pG, 1FM, 2V		X	X	X	X											
25			MW10 "		X	X	X	X											
26			Dup 2 "		X	X	X	X											
27 & 28			TB/TS - 1 Each				X												
			MS - E186723		Extra Sample from MW8 for Matrix Spikes.														
			TS050322.02																

RECEIVED
23 MAR 2005
SE1147

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAC

Routine: WHITE - Client to please YELLOW - If analytical is intractable / data to be returned and not back in Sydney BLUE - To be returned with results

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1148
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	3
Reference/Order	:	E12723/4/COC#31195
Project	:	E12723/4
Received Samples	:	23/03/05
Instructions	:	23/03/05
Date Reported	:	11/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1148

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E0230	TPH C6-C9 by purge & trap	07/04/05	07/04/05	JMC	094
E0221F	TPH (C10-C36)	01/04/05	02/04/05	GTO	094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	07/04/05	07/04/05	JMC	094
E4870	Dissolved Metals by ICP-MS	31/03/05	31/03/05	DLU	093
E4850	Mercury	31/03/05	31/03/05	DLU	093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA	095
E2570	Total Nitrogen	05/04/05	05/04/05	PKE	101
E2770	TKN	02/04/05	04/04/05	PKE	101
E2550	Nitrate-N	31/03/05	31/03/05	PKE	101
E2560	Nitrite-N	31/03/05	31/03/05	PKE	101
E2640	Phosphorus-Total	02/04/05	04/04/05	PKE	101
E2330	Ammonia as N	30/03/05	30/03/05	PKE	101

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1148
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/COC#31195
Project : E12723/4

Analyte	Lab No	E186719	E186720	E186721		
		MW3	MW4	MW13		
	Sample Id	23.03.05	23.03.05	23.03.05		
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	30	nd	nd		
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	nd	nd		
C15-C28 Fraction	100	nd	nd	nd		
C29-C36 Fraction	100	nd	nd	nd		
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	nd		
Toluene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
m&p-Xylene	2	nd	nd	nd		
o-Xylene	1	nd	nd	nd		
4-Bromofluorobenzene-SURROGATE	1	113%	107%	96%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1148

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31195

Project : E12723/4

Analyte	Lab No	E186719	E186720	E186721		
		MW3	MW4	MW13		
	Sample Id	23.03.05	23.03.05	23.03.05		
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.002	nd	0.002		
Cadmium	0.0001	0.0001	nd	nd		
Chromium	0.001	nd	nd	0.001		
Copper	0.001	0.006	nd	nd		
Nickel	0.001	0.002	nd	nd		
Lead	0.001	nd	nd	nd		
Zinc	0.002	0.056	0.015	0.007		
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1148

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31195

Project : E12723/4

Analyte	Lab No	E186719	E186720	E186721		
		MW3	MW4	MW13		
	Sample Id	23.03.05	23.03.05	23.03.05		
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	nd	nd		
Acenaphthylene	1	nd	nd	nd		
Acenaphthene	1	nd	nd	nd		
Fluorene	1	nd	nd	nd		
Phenanthrene	1	nd	nd	nd		
Anthracene	1	nd	nd	nd		
Fluoranthene	1	nd	nd	nd		
Pyrene	1	nd	nd	nd		
Benz(a)anthracene	1	nd	nd	nd		
Chrysene	1	nd	nd	nd		
Benzo(b) & (k)fluoranthene	2	nd	nd	nd		
Benzo(a)pyrene	1	nd	nd	nd		
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd		
Dibenz(a.h)anthracene	1	nd	nd	nd		
Benzo(g.h.i)perylene	1	nd	nd	nd		
Total USEPA Priority PAHs	1	nd	nd	nd		
2-Fluorobiphenyl-SURROGATE	1	72%	77%	73%		
Anthracene-D10-SURROGATE	1	80%	85%	80%		
p-Terphenyl-D14-SURROGATE	1	82%	87%	83%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1148

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/COC#31195

Project : E12723/4

Analyte	Lab No	E186719	E186720	E186721		
		MW3	MW4	MW13		
	Sample Id	23.03.05	23.03.05	23.03.05		
	PQL					
Total Nitrogen	0.1	0.3	1.4	6.2		
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	0.3	1.4	6.2		
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd	nd	nd		
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd	nd	nd		
E2640 Total Phosphorus in Water						
Phosphorus	0.02	nd	0.27	0.18		
E2330 Ammonia as N in Water						
Ammonia as N	0.01	0.03	1.45	4.15		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1148

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

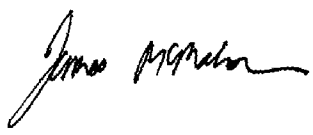
N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments



James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1148

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1148

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	140			75%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	4960			90%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			107%		
Toluene	10	10			105%		
Ethylbenzene	10	12			122%		
m&p-Xylene	20	23			114%		
o-Xylene	10	11			109%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1148

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4870 Dissolved Metals in Waters							
Arsenic	0.100	0.101			101%		
Cadmium	0.1000	0.098			98%		
Chromium	0.100	0.100			100%		
Copper	0.100	0.101			101%		
Nickel	0.100	0.097			97%		
Lead	0.100	0.105			105%		
Zinc	0.100	0.105			105%		
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1148

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			77%		
Acenaphthylene	10	8			77%		
Acenaphthene	10	8			76%		
Fluorene	10	8			76%		
Phenanthrene	10	8			79%		
Anthracene	10	8			79%		
Fluoranthene	10	8			82%		
Pyrene	10	8			81%		
Benz(a)anthracene	10	8			77%		
Chrysene	10	9			87%		
Benzo(b) & (k)fluoranthene	20	16			78%		
Benzo(a)pyrene	10	8			75%		
Indeno(1.2.3-cd)pyrene	10	7			75%		
Dibenz(a.h)anthracene	10	8			84%		
Benzo(g.h.i)perylene	10	8			82%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1148

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E2770 Kjeldahl Nitrogen in Water							
Kjeldahl Nitrogen	1	1.0			103%		
E2550 Nitrate as N in Water							
Nitrate as N	1.0	1.04			104%		
E2560 Nitrite as N in Water							
Nitrite as N	1.0	1.04	1.04		104%	104%	
E2640 Total Phosphorus in Water							
Phosphorus	0.40	0.41			102%		
E2330 Ammonia as N in Water							
Ammonia as N	1.0	1.02	0.99		102%	99%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1148

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E2770 Kjeldahl Nitrogen in Water (E186719)								
Kjeldahl Nitrogen	0.2	0.3	0.3	39%				
E2550 Nitrate as N in Water (E186719)								
Nitrate as N	nd	nd						
E2640 Total Phosphorus in Water (E186719)								
Phosphorus	nd	nd						

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1148

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	nd				
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd				
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd				
E2640 Total Phosphorus in Water						
Phosphorus	0.02	nd				
E2330 Ammonia as N in Water						
Ammonia as N	0.01	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
ABN 38 0081 27 802
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 23/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/COC#31195
Project:	E12723/4
Our Reference Number :	5E1148
Date Received by Amdel :	23/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	3	
TPH C6-C9 by purge & trap	E0230	3	Amdel's turnaround times
TPH (C10-C36)	E0221F	3	are typically 3-5 working
Benzene,Toluene,Ethylbenzene & Xylene	E0010	3	days.
Dissolved Metals by ICP-MS	E4870	3	
Mercury	E4850	3	
Total Nitrogen	E2570	3	
TKN	E2770	3	
Nitrate-N	E2550	3	
Nitrite-N	E2560	3	
Phosphorus-Total	E2640	3	
Ammonia as N	E2330	3	
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace..	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

8874 0503 15 Area D

No: 31195

Chain of Custody 4902 4889

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) Andel, Cardiff	Sampled by: Glenn Harris 0429 121 594	Consigning Office: Sydney, Lane Cove West Date Dispatched:
Attention:	Project Manager: (report results to) Anne Nartuwy	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Samples - 2 Ltr Pre-pack (Andel Cardiff)	23/3/05	6PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	TKN	Total P	Nitrate	Nitrite as Total N	Ammonia	Sample Condition on Receipt
E186719	Water	Glass / Plastic	MW3	23/3/05	X	X	X	X	X	X	X	X	X	
20		U-al.	MW4	↓	X	X	X	X	X	X	X	X	X	
↓ 21			MW13		X	X	X	X	X	X	X	X	X	
		✓ N) samples : 2V, 1AM, 2x500ml u/p G, 1x500ml H_2SO_4 G, 1L u/p P												

RECEIVED 23 MAR 2005 SE1148

Special Laboratory Instructions: Analysis: PAH, TPH, BTEX, Metals: 8, TKN, Total P and Nitrate & Nitrite as Total N, Ammonia

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

P.01/02 IU 4902489 23-MAR-2005 19:36 FROM Coffey Sydney

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1155
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	1
Reference/Order	:	E12723/4/20748
Project	:	E12723/4
Received Samples	:	24/03/05
Instructions	:	24/03/05
Date Reported	:	14/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1155

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E0230	TPH C6-C9 by purge & trap	13/04/05	13/04/05	MOL 094
E0221F	TPH (C10-C36)	01/04/05	01/04/05	GTO 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	13/04/05	13/04/05	MOL 094
E4870	Dissolved Metals by ICP-MS	31/03/05	31/03/05	DLU 093
E4850	Mercury	31/03/05	31/03/05	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	01/04/05	02/04/05	MFA 095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1155
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/20748
Project : E12723/4

Analyte	Lab No	E186756				
		WBA2				
	Sample Id	24.3.05				
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd				
C15-C28 Fraction	100	nd				
C29-C36 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				
4-Bromofluorobenzene-SURROGATE	1	96%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1155

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/20748

Project : E12723/4

Analyte	Lab No	E186756				
		WBA2				
	Sample Id	24.3.05				
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	0.001				
Nickel	0.001	nd				
Lead	0.001	0.009				
Zinc	0.002	0.011				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1155

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/20748

Project : E12723/4

Analyte	Lab No	E186756				
		WBA2				
	Sample Id	24.3.05				
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				
Total USEPA Priority PAHs	1	nd				
2-Fluorobiphenyl-SURROGATE	1	70%				
Anthracene-D10-SURROGATE	1	83%				
p-Terphenyl-D14-SURROGATE	1	85%				

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1155

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

TPHC6-C9/BTEX in Water done under
NATA Accreditation Number: 14356

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1155

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1155

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	140			75%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	5450			99%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			107%		
Toluene	10	10			105%		
Ethylbenzene	10	12			122%		
m&p-Xylene	20	23			114%		
o-Xylene	10	11			109%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1155

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4870 Dissolved Metals in Waters							
Arsenic	0.100	0.101			101%		
Cadmium	0.1000	0.098			98%		
Chromium	0.100	0.100			100%		
Copper	0.100	0.101			101%		
Nickel	0.100	0.097			97%		
Lead	0.100	0.105			105%		
Zinc	0.100	0.105			105%		
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1155

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	8			77%		
Acenaphthylene	10	8			77%		
Acenaphthene	10	8			76%		
Fluorene	10	8			76%		
Phenanthrene	10	8			79%		
Anthracene	10	8			79%		
Fluoranthene	10	8			82%		
Pyrene	10	8			81%		
Benz(a)anthracene	10	8			77%		
Chrysene	10	9			87%		
Benzo(b) & (k)fluoranthene	20	16			78%		
Benzo(a)pyrene	10	8			75%		
Indeno(1.2.3-cd)pyrene	10	7			75%		
Dibenz(a.h)anthracene	10	8			84%		
Benzo(g.h.i)perylene	10	8			82%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 331 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 24/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/20748
Project:	E12723/4
Our Reference Number :	5E1155
Date Received by Amdel :	24/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	1	
TPH C6-C9 by purge & trap	E0230	1	Amdel's turnaround times
TPH (C10-C36)	E0221F	1	are typically 3-5 working
Benzene,Toluene,Ethylbenzene & Xylene	E0010	1	days.
Dissolved Metals by ICP-MS	E4870	1	
Mercury	E4850	1	
Australian GST	GST		

QCNOTE10

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

8874 0515

Chain of Custody

No: 20748

Coffey

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Dispatch to: (Address & Phone No.) Amdel

Sampled by: J. DUTTON

Consigning Officer: SMD

Date Dispatched:

Attention: Emily

Project Manager: (report results to) A. Northway

Courier Service:

Consignment Note No:

Relinquished by: James Dutton

Date: 24.3.05 Time:

Received by: Emily

Date: 24/3 Time: 12.40

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	NAPHs = BTEX	Metals (8)	Sample Condition on Receipt
E18676	water	1 liter bottle + plastic	WBA2	24.3.05	/	/	/	/	

24 MAR 2005

Special Laboratory Instructions: 8 Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)

Detection Limits:

Turnaround Required:

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

20068/11-01

amdel
www.amdel.com

NATA Accredited Laboratory Number: 1464

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E1191
Attention	:	Ms Anne Northway
Client	:	Coffey Geosciences Pty Ltd
	:	P.O. Box 125
	:	NORTH RYDENSW 2113
Samples	:	49
Reference/Order	:	E12723/4/30612-4
Project	:	E12723/4 AREA D
Received Samples	:	29/03/05
Instructions	:	29/03/05
Date Reported	:	12/04/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for < 10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

Report No. : 5E1191

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	05/04/05	05/04/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	04/04/05	07/04/05	GTO	094
E1221	TPH (C10-C36)	04/04/05	05/04/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	04/04/05	07/04/05	GTO	094
E5910	Metals by ICP-AES	07/04/05	08/04/05	DLU	093
E5950	Mercury in Soil	06/04/05	06/04/05	DLU	093
E1110	Polycyclic Aromatic Hydrocarbons	04/04/05	05/04/05	MFA	095
E1290	Volatile Organic Compounds	04/04/05	04/04/05	GTO	094
E1080	Organochlorine Pesticides	04/04/05	05/04/05	MFA	095
E1120	Polychlorinated Biphenyls in Soil, mg/kg	04/04/05	05/04/05	MFA	095

amdel

NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187603	E187604	E187605	E187606	E187607
		CTP6	CTP6	CTP7	CTP7	CTP8
	Sample Id	0.0-0.2	0.5-0.6	0.0-0.2	0.5-0.6	0.0-0.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	3%	13%	9%	5%	9%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	180	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	70%	93%	92%	85%	90%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187608	E187610	E187612	E187615	E187616
		CTP8	CTP10	CTP10	CTP11	CTP11
	Sample Id	0.8-1.0	0.5-0.7	2.0-2.2	0.4-0.6	2.0-2.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	5%	4%	6%	7%	2%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	80	nd
C29-C36 Fraction	50	nd	nd	nd	50	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	84%	92%	83%	87%	86%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187619	E187620	E187625	E187626	E187628
		CTP12	CTP12	CTP13	CTP13	CTP14
	Sample Id	1.0-1.2	2.3-1.6	0.4-0.6	0.7-0.9	1.0-1.2
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	4%	4%	10%	1%	6%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	10	nd	nd
C15-C28 Fraction	50	60	nd	90	nd	70
C29-C36 Fraction	50	nd	nd	50	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	--	--	nd
Toluene	1	nd	nd	--	--	nd
Ethylbenzene	1	nd	nd	--	--	nd
m&p-Xylene	2	nd	nd	--	--	nd
o-Xylene	1	nd	nd	--	--	nd
4-Bromofluorobenzene-SURROGATE	1	95%	82%	--	--	74%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187630	E187631	E187635	E187637	E187638
		CTP14	CTP15	CTP15	CTP16	CTP16
	Sample Id	2.0-2.2	0.0-0.2	1.8-2.2	1.0-1.2	1.3-1.7
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	3%	14%	4%	10%	3%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	nd	nd	nd	nd	nd
C29-C36 Fraction	50	nd	nd	nd	nd	nd
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	81%	91%	81%	87%	76%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187640	E187643	E187644	E187646	E187648
		CTP17	CTP17	CTP18	CTP18	CTP19
	Sample Id	1.0-1.2	3.8-4.0	0.0-0.2	1.0-1.2	0.2-0.4
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	6%	22%	9%	15%	17%
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd	nd	nd	nd
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd	nd	nd	nd
C15-C28 Fraction	50	60	nd	nd	50	160
C29-C36 Fraction	50	nd	nd	nd	nd	50
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	88%	77%	89%	73%	80%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187649	E187651			
		CTP19	DUPD17			
	Sample Id	1.0-1.3	24.3.05			
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	26%	9%			
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	10			
C15-C28 Fraction	50	nd	70			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	--			
Toluene	1	nd	--			
Ethylbenzene	1	nd	--			
m&p-Xylene	2	nd	--			
o-Xylene	1	nd	--			
4-Bromofluorobenzene-SURROGATE	1	73%	--			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30612-4

Project : E12723/4 AREA D

Analyte	Lab No	E187603	E187604	E187605	E187606	E187607
		CTP6	CTP6	CTP7	CTP7	CTP8
	Sample Id	0.0-0.2	0.5-0.6	0.0-0.2	0.5-0.6	0.0-0.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	16
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	nd	nd	5
Copper	5	nd	nd	7	nd	15
Nickel	2	nd	nd	nd	nd	3
Lead	5	6	nd	41	nd	160
Zinc	5	nd	nd	66	nd	160
E5950 Mercury in Soil						
Mercury	0.05	0.05	nd	0.05	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187608	E187610	E187612	E187615	E187616
		CTP8	CTP10	CTP10	CTP11	CTP11
	Sample Id	0.8-1.0	0.5-0.7	2.0-2.2	0.4-0.6	2.0-2.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	6	6	9
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	nd	6	19	17
Copper	5	nd	nd	5	30	nd
Nickel	2	nd	nd	2	7	nd
Lead	5	nd	14	14	68	49
Zinc	5	nd	31	25	110	15
E5950 Mercury in Soil						
Mercury	0.05	nd	nd	nd	0.10	0.09

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187619	E187620	E187625	E187626	E187628
		CTP12	CTP12	CTP13	CTP13	CTP14
	Sample Id	1.0-1.2	2.3-1.6	0.4-0.6	0.7-0.9	1.0-1.2
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	7	nd	nd	5
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	10	12	10	nd	20
Copper	5	17	16	18	nd	25
Nickel	2	7	3	7	nd	7
Lead	5	49	99	88	nd	150
Zinc	5	110	96	170	6	94
E5950 Mercury in Soil						
Mercury	0.05	0.08	0.08	0.06	nd	0.24

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187630	E187631	E187635	E187637	E187638
		CTP14	CTP15	CTP15	CTP16	CTP16
	Sample Id	2.0-2.2	0.0-0.2	1.8-2.2	1.0-1.2	1.3-1.7
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	5	nd	6	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	nd	23	nd	18	12
Copper	5	nd	26	nd	31	14
Nickel	2	nd	9	nd	8	16
Lead	5	9	77	nd	82	31
Zinc	5	10	98	nd	84	74
E5950 Mercury in Soil						
Mercury	0.05	0.06	0.10	nd	0.33	0.07

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187640	E187643	E187644	E187646	E187648
		CTP17	CTP17	CTP18	CTP18	CTP19
	Sample Id	1.0-1.2	3.8-4.0	0.0-0.2	1.0-1.2	0.2-0.4
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd	nd	nd	nd
Cadmium	0.5	nd	nd	nd	nd	nd
Chromium	5	9	nd	7	11	5
Copper	5	17	nd	10	14	7
Nickel	2	5	2	8	9	nd
Lead	5	62	90	37	38	54
Zinc	5	67	39	50	77	33
E5950 Mercury in Soil						
Mercury	0.05	0.08	nd	0.06	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187649	E187651			
		CTP19	DUPD17			
	Sample Id	1.0-1.3	24.3.05			
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	15	7			
Copper	5	17	11			
Nickel	2	25	6			
Lead	5	14	68			
Zinc	5	48	160			
E5950 Mercury in Soil						
Mercury	0.05	nd	0.06			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187603	E187604	E187605	E187606	E187607
		CTP6	CTP6	CTP7	CTP7	CTP8
	Sample Id	0.0-0.2	0.5-0.6	0.0-0.2	0.5-0.6	0.0-0.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	nd
Pyrene	0.5	nd	nd	nd	nd	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	87%	89%	83%	91%	89%
Anthracene-d10-SURROGATE	1	88%	95%	89%	95%	93%
p-Terphenyl-D14-SURROGATE	1	89%	97%	92%	100%	97%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187608	E187610	E187612	E187615	E187616
		CTP8	CTP10	CTP10	CTP11	CTP11
	Sample Id	0.8-1.0	0.5-0.7	2.0-2.2	0.4-0.6	2.0-2.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	0.6	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	0.7	nd
Pyrene	0.5	nd	nd	nd	0.7	nd
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	2.0	nd
2-Fluorobiphenyl-SURROGATE	1	88%	86%	89%	89%	89%
Anthracene-d10-SURROGATE	1	94%	95%	93%	92%	90%
p-Terphenyl-D14-SURROGATE	1	95%	95%	98%	95%	95%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187619	E187620	E187625	E187626	E187628
		CTP12	CTP12	CTP13	CTP13	CTP14
	Sample Id	1.0-1.2	2.3-1.6	0.4-0.6	0.7-0.9	1.0-1.2
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	0.5	nd	nd	nd	0.8
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	1.6	nd	1.0	nd	1.0
Pyrene	0.5	1.6	0.6	1.2	nd	1.0
Benz(a)anthracene	0.5	0.7	nd	0.5	nd	0.6
Chrysene	0.5	0.7	nd	0.5	nd	0.6
Benzo(b) & (k)fluoranthene	1	1	nd	1	nd	1
Benzo(a)pyrene	0.5	0.8	nd	0.6	nd	0.6
Indeno(1.2.3-cd)pyrene	0.5	0.6	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	0.6	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	8.2	0.6	4.8	nd	5.6
2-Fluorobiphenyl-SURROGATE	1	91%	87%	83%	88%	89%
Anthracene-d10-SURROGATE	1	93%	92%	85%	91%	91%
p-Terphenyl-D14-SURROGATE	1	95%	97%	88%	96%	94%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187630	E187631	E187635	E187637	E187638
		CTP14	CTP15	CTP15	CTP16	CTP16
	Sample Id	2.0-2.2	0.0-0.2	1.8-2.2	1.0-1.2	1.3-1.7
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	nd
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	nd	nd	nd	nd	0.7
Pyrene	0.5	nd	nd	nd	nd	0.8
Benz(a)anthracene	0.5	nd	nd	nd	nd	nd
Chrysene	0.5	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	1	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.5	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	0.5	nd	nd	nd	nd	1.4
2-Fluorobiphenyl-SURROGATE	1	86%	87%	89%	93%	93%
Anthracene-d10-SURROGATE	1	92%	91%	88%	91%	86%
p-Terphenyl-D14-SURROGATE	1	94%	96%	89%	91%	89%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187640	E187643	E187644	E187646	E187648
		CTP17	CTP17	CTP18	CTP18	CTP19
	Sample Id	1.0-1.2	3.8-4.0	0.0-0.2	1.0-1.2	0.2-0.4
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd	nd	nd	nd
Acenaphthylene	0.5	nd	nd	nd	nd	nd
Acenaphthene	0.5	nd	nd	nd	nd	nd
Fluorene	0.5	nd	nd	nd	nd	nd
Phenanthrene	0.5	nd	nd	nd	nd	1.4
Anthracene	0.5	nd	nd	nd	nd	nd
Fluoranthene	0.5	0.5	nd	0.8	1.2	2.6
Pyrene	0.5	0.6	0.6	1.0	1.4	2.6
Benz(a)anthracene	0.5	nd	nd	0.5	0.9	1.0
Chrysene	0.5	nd	nd	0.5	0.8	1.0
Benzo(b) & (k)fluoranthene	1	nd	nd	1	1	2
Benzo(a)pyrene	0.5	nd	nd	0.6	0.8	1.0
Indeno(1.2.3-cd)pyrene	0.5	nd	nd	0.6	0.7	0.7
Dibenz(a.h)anthracene	0.5	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	0.5	nd	nd	nd	0.6	0.6
Total USEPA Priority PAHs	0.5	1.2	0.6	4.8	7.8	13
2-Fluorobiphenyl-SURROGATE	1	93%	90%	91%	89%	91%
Anthracene-d10-SURROGATE	1	91%	99%	89%	87%	91%
p-Terphenyl-D14-SURROGATE	1	93%	107%	90%	88%	93%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187649	E187651			
		CTP19	DUPD17			
	Sample Id	1.0-1.3	24.3.05			
	PQL					
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	nd	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	nd	0.6			
Pyrene	0.5	nd	nd			
Benz(a)anthracene	0.5	nd	nd			
Chrysene	0.5	nd	nd			
Benzo(b) & (k)fluoranthene	1	nd	nd			
Benzo(a)pyrene	0.5	nd	nd			
Indeno(1.2.3-cd)pyrene	0.5	nd	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	nd	nd			
Total USEPA Priority PAHs	0.5	nd	0.6			
2-Fluorobiphenyl-SURROGATE	1	88%	90%			
Anthracene-d10-SURROGATE	1	86%	87%			
p-Terphenyl-D14-SURROGATE	1	88%	89%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187625	E187626	E187651		
		CTP13	CTP13	DUPD17		
	Sample Id	0.4-0.6	0.7-0.9	24.3.05		
	PQL					
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd	nd	nd		
Bromobenzene	1	nd	nd	nd		
Bromochloromethane	1	nd	nd	nd		
Bromodichloromethane	1	nd	nd	nd		
Bromoform	1	nd	nd	nd		
Bromomethane	1	nd	nd	nd		
n-Butylbenzene	1	nd	nd	nd		
sec-Butylbenzene	1	nd	nd	nd		
tert-Butylbenzene	1	nd	nd	nd		
Carbon tetrachloride	1	nd	nd	nd		
Chlorobenzene	1	nd	nd	nd		
Chloroethane	1	nd	nd	nd		
Chloroform	1	nd	nd	nd		
Chloromethane	1	nd	nd	nd		
2-Chlorotoluene	1	nd	nd	nd		
4-Chlorotoluene	1	nd	nd	nd		
Dibromochloromethane	1	nd	nd	nd		
1.2-Dibromo-3-chloropropane	1	nd	nd	nd		
1.2-Dibromoethane (EDB)	1	nd	nd	nd		
Dibromomethane	1	nd	nd	nd		
1.2-Dichlorobenzene	1	nd	nd	nd		
1.3-Dichlorobenzene	1	nd	nd	nd		
1.4-Dichlorobenzene	1	nd	nd	nd		
Dichlorodifluoromethane	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187625	E187626	E187651		
		CTP13	CTP13	DUPD17		
	Sample Id	0.4-0.6	0.7-0.9	24.3.05		
	PQL					
1.1-Dichloroethene	1	nd	nd	nd		
1.2-Dichloroethane	1	nd	nd	nd		
1.1-Dichloroethane	1	nd	nd	nd		
cis-1.2-Dichloroethene	1	nd	nd	nd		
trans-1.2-Dichloroethene	1	nd	nd	nd		
1.2-Dichloropropane	1	nd	nd	nd		
1.3-Dichloropropane	1	nd	nd	nd		
2.2-Dichloropropane	1	nd	nd	nd		
1.1-Dichloropropylene	1	nd	nd	nd		
cis-1.3-Dichloropropylene	1	nd	nd	nd		
trans-1.3-Dichloropropylene	1	nd	nd	nd		
Ethylbenzene	1	nd	nd	nd		
Hexachlorobutadiene	1	nd	nd	nd		
Isopropylbenzene	1	nd	nd	nd		
p-Isopropyltoluene	1	nd	nd	nd		
Methylene chloride	1	nd	nd	nd		
Naphthalene	1	nd	nd	nd		
n-Propylbenzene	1	nd	nd	nd		
Styrene	1	nd	nd	nd		
1.1.1.2-Tetrachloroethane	1	nd	nd	nd		
1.1.2.2-Tetrachloroethane	1	nd	nd	nd		
Tetrachloroethene	1	nd	nd	nd		
Toluene	1	nd	nd	nd		
1.2.3-Trichlorobenzene	1	nd	nd	nd		
1.2.4-Trichlorobenzene	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187625	E187626	E187651		
		CTP13	CTP13	DUPD17		
	Sample Id	0.4-0.6	0.7-0.9	24.3.05		
	PQL					
1.1.1-Trichloroethane	1	nd	nd	nd		
1.1.2-Trichloroethane	1	nd	nd	nd		
Trichloroethene	1	nd	nd	nd		
Trichlorofluoromethane	1	nd	nd	nd		
1.2.3-Trichloropropane	1	nd	nd	nd		
1.2.4-Trimethylbenzene	1	nd	nd	nd		
1.3.5-Trimethylbenzene	1	nd	nd	nd		
Vinyl chloride	1	nd	nd	nd		
ortho-Xylene	1	nd	nd	nd		
meta- & para-Xylene	2	nd	nd	nd		
2-Butanone (MEK)	10	nd	nd	nd		
4-Methyl-2-Pentanone (MIBK)	10	nd	nd	nd		
Pentafluorobenzene-SURROGATE	1	100%	99%	99%		
Toluene-D8-SURROGATE	1	100%	100%	100%		
4-Bromofluorobenzene-SURROGATE	1	99%	99%	99%		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/30612-4
Project : E12723/4 AREA D

Analyte	Lab No	E187619	E187631	E187648		
		CTP12	CTP15	CTP19		
	Sample Id	1.0-1.2	0.0-0.2	0.2-0.4		
	PQL					
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd	nd	nd		
a-BHC	0.1	nd	nd	nd		
g-BHC	0.1	nd	nd	nd		
Heptachlor	0.1	nd	nd	nd		
Aldrin	0.1	nd	nd	nd		
b-BHC	0.1	nd	nd	nd		
d-BHC	0.1	nd	nd	nd		
Oxychlordane	0.1	nd	nd	nd		
Heptachlor epoxide	0.1	nd	nd	nd		
Endosulfan 1	0.1	nd	nd	nd		
Chlordane-Trans	0.1	nd	nd	nd		
Chlordane-Cis	0.1	nd	nd	nd		
trans-Nonachlor	0.1	nd	nd	nd		
DDE	0.1	nd	nd	nd		
Dieldrin	0.1	nd	nd	nd		
Endrin	0.1	nd	nd	nd		
DDD	0.1	nd	nd	nd		
Endosulfan 2	0.1	nd	nd	nd		
DDT	0.1	nd	nd	nd		
Endosulfan sulfate	0.1	nd	nd	nd		
Methoxychlor	0.1	nd	nd	nd		
2.4.5.6-TCMX-SURROGATE	1	nd	nd	nd		
2.4.5.6-TCMX-SURROGATE	1	103	88	80		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E1191

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/30612-4

Project : E12723/4 AREA D

Analyte	Lab No	E187619	E187631	E187648		
		CTP12	CTP15	CTP19		
	Sample Id	1.0-1.2	0.0-0.2	0.2-0.4		
	PQL					
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd	nd	nd		
Aroclor 1221	1	nd	nd	nd		
Aroclor 1232 & 1242 as total	1	nd	nd	nd		
Aroclor 1248 & 1254 as total	1	nd	nd	nd		
Aroclor 1260 & 1262 as total	1	nd	nd	nd		
Total Polychlorinated biphenyl	1	nd	nd	nd		

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

ASET AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref: ASET5689/ 8222 / 1 - 13
Your ref: 5E1191
NATA Accreditation No: 14484

11 April 2005

Amdel Laboratories Ltd
99 Mitchell Rd
Cardiff
NSW 2285

Attn: Ms Julie Edman
Fax No: 02 - 4902 4899

Dear Julie,

This report presents the results of thirteen samples, forwarded by Amdel Laboratories Ltd, on 5 April 2005, for analysis for asbestos.

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

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

3. Results:

Sample No. 1. ASET5689 / 8222 / 1. 5E1191 - E187603.
Approx dimensions 4.0 cm x 4.0 cm x 0.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET5689 / 8222 / 2. 5E1191 - E187605.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 3. ASET5689 / 8222 / 3. 5E1191 - E187607.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 4. ASET5689 / 8222 / 4. 5E1191 - E187610.
Approx dimensions 4.0 cm x 4.0 cm x 1.2 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET5689 / 8222 / 5. 5E1191 - E187615.
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of bitumen.
No asbestos detected.

Sample No. 6. ASET5689 / 8222 / 6. 5E1191 - E187619.
Approx dimensions 4.0 cm x 4.0 cm x 1.3 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of glass.
No asbestos detected.

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: aset@bigpond.net.au WEBSITE: aset.com.au

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

ASET

Sample No. 7. ASET5689 / 8222 / 7. 5E1191 - E187625.
Approx dimensions 4.0 cm x 4.0 cm x 1.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 8. ASET5689 / 8222 / 8. 5E1191 - E187628.
Approx dimensions 4.0 cm x 4.0 cm x 1.2 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 9. ASET5689 / 8222 / 9. 5E1191 - E187631.
Approx dimensions 4.0 cm x 4.0 cm x 2.0 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 10. ASET5689 / 8222 / 10. 5E1191 - E187637.
Approx dimensions 4.0 cm x 4.0 cm x 1.2 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 11. ASET5689 / 8222 / 11. 5E1191 - E187644.
Approx dimensions 4.0 cm x 4.0 cm x 0.6 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 12. ASET5689 / 8222 / 12. 5E1191 - E187648.
Approx dimensions 4.0 cm x 4.0 cm x 0.7 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

Sample No. 13. ASET5689 / 8222 / 13. 5E1191 - E187651.
Approx dimensions 4.0 cm x 4.0 cm x 0.5 cm
The sample consisted of mixture of sandy soil, stones and plant matter.
No asbestos detected.

NATA Accredited Laboratory Number:

This test, calibration or measurement is covered by NATA accreditation and has been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Bernie Brompton. BEnvSc
Environmental Scientist / Approved Analyst

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

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E1191

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)	
Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria < 4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD > 10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A = Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E1191

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	< PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (> 10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E1191

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E187603,E187628)							
C6-C9 Fraction	100	89	82	89%	82%	86%	8%
E1221 TPH in Soil (E187603,E187623)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		84%			
C29-C36 Fraction							
E1221 TPH in Soil (E187643)							
C10-C14 Fraction							
C15-C28 Fraction	550	460		84%			
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil (E187603,E187628)							
Benzene	10	9.6		96%			
Toluene	10	10		99%			
Ethylbenzene	10	9		88%			
m&p-Xylene	20	17		86%			
o-Xylene	10	10		95%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1230 TPH in Soil by Purge & Trap/GC-MS							
C6-C9 Fraction	100	96	86		96%	86%	
E1221 TPH in Soil							
C10-C14 Fraction							
C15-C28 Fraction	550	460	460		82%	82%	
C29-C36 Fraction							
E1010 BTEX (P&T) in Soil							
Benzene	10	9.6	9.2		96%	91%	
Toluene	10	9	10		92%	96%	
Ethylbenzene	10	9	9		87%	87%	
m&p-Xylene	20	17	17		87%	85%	
o-Xylene	10	9	9		92%	88%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1230 TPH in Soil by Purge & Trap/GC-MS (E187603,E187604)								
C6-C9 Fraction	nd	nd			nd	nd		
E1230 TPH in Soil by Purge & Trap/GC-MS (E187628)								
C6-C9 Fraction	nd	nd						
E1221 TPH in Soil (E187603,E187604)								
C10-C14 Fraction	nd	nd			nd	nd		
C15-C28 Fraction	nd	nd			nd	nd		
C29-C36 Fraction	nd	nd			nd	nd		
E1010 BTEX (P&T) in Soil (E187603,E187604)								
Benzene	nd	nd			nd	nd		
Toluene	nd	nd			nd	nd		
Ethylbenzene	nd	nd			nd	nd		
m&p-Xylene	nd	nd			nd	nd		
o-Xylene	nd	nd			nd	nd		
E1010 BTEX (P&T) in Soil (E187628)								
Benzene	nd	nd						
Toluene	nd	nd						
Ethylbenzene	nd	nd						
m&p-Xylene	nd	nd						
o-Xylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	nd	nd			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E5910 Metals in Soil (E187603,E187625)							
Arsenic	50	47	43	93%	86%	89%	9%
Cadmium	50	44	39	88%	77%	82%	13%
Chromium	50	44	44	88%	87%	88%	1%
Copper	50	47	37	94%	75%	84%	23%
Nickel	50	43	42	87%	85%	86%	3%
Lead	50	43	37	87%	75%	81%	15%
Zinc	50	43	54	86%	108%	97%	22%
E5950 Mercury in Soil (E187603,E187623)							
Mercury	0.50	0.39		78%			
E5950 Mercury in Soil (E187643)							
Mercury	0.50	0.42		85%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E5910 Metals in Soil							
Arsenic	50	41	45		81%	90%	
Cadmium	50	40	43		79%	86%	
Chromium	50	43	44		85%	89%	
Copper	50	42	45		84%	91%	
Nickel	50	39	43		79%	86%	
Lead	50	39	43		79%	86%	
Zinc	50	47	41		93%	82%	
E5950 Mercury in Soil							
Mercury	0.50	0.40	0.43		81%	87%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E5910 Metals in Soil (E187603,E187604)								
Arsenic	nd	nd			nd	nd		
Cadmium	nd	nd			nd	nd		
Chromium	nd	nd			nd	nd		
Copper	nd	nd			nd	nd		
Nickel	nd	nd			nd	nd		
Lead	6	6	6	0%	nd	nd		
Zinc	5	nd	5		nd	nd		
E5910 Metals in Soil (E187625)								
Arsenic	nd	nd						
Cadmium	nd	nd						
Chromium	11	10	11	9%				
Copper	13	18	16	32%				
Nickel	8	7	8	13%				
Lead	77	88	83	13%				
Zinc	170	170	170	0%				
E5950 Mercury in Soil (E187603,E187604)								
Mercury	nd	0.05	0.05		nd	nd		
E5950 Mercury in Soil (E187643)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	nd	nd			
Copper	5	nd	nd			
Nickel	2	nd	nd			
Lead	5	nd	nd			
Zinc	5	nd	nd			
E5950 Mercury in Soil						
Mercury	0.05	nd	nd			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E187603,E187623)							
Naphthalene	5	4.2		82%			
Acenaphthylene	5	4.2		83%			
Acenaphthene	5	4.2		83%			
Fluorene	5	4.2		84%			
Phenanthrene	5	4.4		86%			
Anthracene	5	4.2		86%			
Fluoranthene	5	4.4		89%			
Pyrene	5	4.2		85%			
Benz(a)anthracene	5	4.2		84%			
Chrysene	5	4.4		86%			
Benzo(b) & (k)fluoranthene	10	8		84%			
Benzo(a)pyrene	5	4.2		85%			
Indeno(1.2.3-cd)pyrene	5	4.4		86%			
Dibenz(a.h)anthracene	5	4.2		86%			
Benzo(g.h.i)perylene	5	4.2		86%			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1191

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E1110 Priority PAH's in Soil (E187643)							
Naphthalene	5		5.2		105%		
Acenaphthylene	5		5.4		109%		
Acenaphthene	5		5.2		103%		
Fluorene	5		5.4		108%		
Phenanthrene	5		5.4		108%		
Anthracene	5		5.4		106%		
Fluoranthene	5		5.8		115%		
Pyrene	5		5.2		104%		
Benz(a)anthracene	5		5.6		111%		
Chrysene	5		5.6		112%		
Benzo(b) & (k)fluoranthene	10		11		110%		
Benzo(a)pyrene	5		5.6		113%		
Indeno(1.2.3-cd)pyrene	5		6.0		120%		
Dibenz(a.h)anthracene	5		5.6		112%		
Benzo(g.h.i)perylene	5		5.4		110%		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1110 Priority PAH's in Soil							
Naphthalene	5	3.8	4.0		77%	82%	
Acenaphthylene	5	3.8	4.2		76%	86%	
Acenaphthene	5	4.0	3.8		78%	76%	
Fluorene	5	4.0	4.0		79%	78%	
Phenanthrene	5	3.8	3.8		77%	76%	
Anthracene	5	4.0	3.8		79%	75%	
Fluoranthene	5	3.8	3.8		76%	76%	
Pyrene	5	4.0	3.8		78%	76%	
Benz(a)anthracene	5	3.6	3.6		73%	73%	
Chrysene	5	4.0	4.0		79%	79%	
Benzo(b) & (k)fluoranthene	10	8	8		76%	77%	
Benzo(a)pyrene	5	3.8	3.8		76%	78%	
Indeno(1.2.3-cd)pyrene	5	4.0	4.0		78%	81%	
Dibenz(a.h)anthracene	5	3.8	3.8		77%	75%	
Benzo(g.h.i)perylene	5	3.8	3.8		78%	77%	

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E187603,E187604)								
Naphthalene	nd	nd			nd	nd		
Acenaphthylene	nd	nd			nd	nd		
Acenaphthene	nd	nd			nd	nd		
Fluorene	nd	nd			nd	nd		
Phenanthrene	nd	nd			nd	nd		
Anthracene	nd	nd			nd	nd		
Fluoranthene	nd	nd			nd	nd		
Pyrene	nd	nd			nd	nd		
Benz(a)anthracene	nd	nd			nd	nd		
Chrysene	nd	nd			nd	nd		
Benzo(b) & (k)fluoranthene	nd	nd			nd	nd		
Benzo(a)pyrene	nd	nd			nd	nd		
Indeno(1.2.3-cd)pyrene	nd	nd			nd	nd		
Dibenz(a.h)anthracene	nd	nd			nd	nd		
Benzo(g.h.i)perylene	nd	nd			nd	nd		

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E1191

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E1110 Priority PAH's in Soil (E187643)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	0.6	0.6	0.6	0%				
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1110 Priority PAH's in Soil						
Naphthalene	0.5	nd	nd			
Acenaphthylene	0.5	nd	nd			
Acenaphthene	0.5	nd	nd			
Fluorene	0.5	nd	nd			
Phenanthrene	0.5	nd	nd			
Anthracene	0.5	nd	nd			
Fluoranthene	0.5	nd	nd			
Pyrene	0.5	nd	nd			
Benz(a)anthracene	0.5	nd	nd			
Chrysene	0.5	nd	nd			
Benzo(b) & (k)fluoranthene	1	nd	nd			
Benzo(a)pyrene	0.5	nd	nd			
Indeno(1.2.3-cd)pyrene	0.5	nd	nd			
Dibenz(a.h)anthracene	0.5	nd	nd			
Benzo(g.h.i)perylene	0.5	nd	nd			

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1290 Volatile Organic Compounds in Soil							
Benzene	10	9.8			98%		
Bromobenzene							
Bromochloromethane							
Bromodichloromethane							
Bromoform							
Bromomethane							
n-Butylbenzene							
sec-Butylbenzene							
tert-Butylbenzene							
Carbon tetrachloride							
Chlorobenzene	10	11			108%		
Chloroethane							
Chloroform							
Chloromethane							
2-Chlorotoluene							
4-Chlorotoluene							
Dibromochloromethane							
1.2-Dibromo-3-chloropropane							
1.2-Dibromoethane (EDB)							
Dibromomethane							
1.2-Dichlorobenzene							
1.3-Dichlorobenzene							
1.4-Dichlorobenzene							
Dichlorodifluoromethane							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1-Dichloroethene	10	10			99%		
1.2-Dichloroethane							
1.1-Dichloroethane							
cis-1.2-Dichloroethene							
trans-1.2-Dichloroethene							
1.2-Dichloropropane							
1.3-Dichloropropane							
2.2-Dichloropropane							
1.1-Dichloropropylene							
cis-1.3-Dichloropropylene							
trans-1.3-Dichloropropylene							
Ethylbenzene							
Hexachlorobutadiene							
Isopropylbenzene							
p-Isopropyltoluene							
Methylene chloride							
Naphthalene							
n-Propylbenzene							
Styrene							
1.1.1.2-Tetrachloroethane							
1.1.2.2-Tetrachloroethane							
Tetrachloroethene							
Toluene	10	10			97%		
1.2.3-Trichlorobenzene							
1.2.4-Trichlorobenzene							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
1.1.1-Trichloroethane							
1.1.2-Trichloroethane							
Trichloroethene	10	9			94%		
Trichlorofluoromethane							
1.2.3-Trichloropropane							
1.2.4-Trimethylbenzene							
1.3.5-Trimethylbenzene							
Vinyl chloride							
ortho-Xylene							
meta- & para-Xylene							
2-Butanone (MEK)							
4-Methyl-2-Pentanone (MIBK)							

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1290 Volatile Organic Compounds in Soil						
Benzene	0.5	nd				
Bromobenzene	1	nd				
Bromochloromethane	1	nd				
Bromodichloromethane	1	nd				
Bromoform	1	nd				
Bromomethane	1	nd				
n-Butylbenzene	1	nd				
sec-Butylbenzene	1	nd				
tert-Butylbenzene	1	nd				
Carbon tetrachloride	1	nd				
Chlorobenzene	1	nd				
Chloroethane	1	nd				
Chloroform	1	nd				
Chloromethane	1	nd				
2-Chlorotoluene	1	nd				
4-Chlorotoluene	1	nd				
Dibromochloromethane	1	nd				
1.2-Dibromo-3-chloropropane	1	nd				
1.2-Dibromoethane (EDB)	1	nd				
Dibromomethane	1	nd				
1.2-Dichlorobenzene	1	nd				
1.3-Dichlorobenzene	1	nd				
1.4-Dichlorobenzene	1	nd				
Dichlorodifluoromethane	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1-Dichloroethene	1	nd				
1.2-Dichloroethane	1	nd				
1.1-Dichloroethane	1	nd				
cis-1.2-Dichloroethene	1	nd				
trans-1.2-Dichloroethene	1	nd				
1.2-Dichloropropane	1	nd				
1.3-Dichloropropane	1	nd				
2.2-Dichloropropane	1	nd				
1.1-Dichloropropylene	1	nd				
cis-1.3-Dichloropropylene	1	nd				
trans-1.3-Dichloropropylene	1	nd				
Ethylbenzene	1	nd				
Hexachlorobutadiene	1	nd				
Isopropylbenzene	1	nd				
p-Isopropyltoluene	1	nd				
Methylene chloride	1	nd				
Naphthalene	1	nd				
n-Propylbenzene	1	nd				
Styrene	1	nd				
1.1.1.2-Tetrachloroethane	1	nd				
1.1.2.2-Tetrachloroethane	1	nd				
Tetrachloroethene	1	nd				
Toluene	1	nd				
1.2.3-Trichlorobenzene	1	nd				
1.2.4-Trichlorobenzene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
1.1.1-Trichloroethane	1	nd				
1.1.2-Trichloroethane	1	nd				
Trichloroethene	1	nd				
Trichlorofluoromethane	1	nd				
1.2.3-Trichloropropane	1	nd				
1.2.4-Trimethylbenzene	1	nd				
1.3.5-Trimethylbenzene	1	nd				
Vinyl chloride	1	nd				
ortho-Xylene	1	nd				
meta- & para-Xylene	2	nd				
2-Butanone (MEK)	10	nd				
4-Methyl-2-Pentanone (MIBK)	10	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1080 Organochlorine Pesticides in Soil							
HCB	0.5	0.5			104%		
a-BHC	0.5	0.5			104%		
g-BHC	0.5	0.5			104%		
Heptachlor	0.5	0.5			102%		
Aldrin	0.5	0.5			102%		
b-BHC	0.5	0.5			104%		
d-BHC	0.5	0.5			96%		
Oxychlordane	0.5	0.5			96%		
Heptachlor epoxide	0.5	0.5			102%		
Endosulfan 1	0.5	0.5			100%		
Chlordane-Trans	0.5	0.5			102%		
Chlordane-Cis	0.5	0.5			102%		
trans-Nonachlor	0.5	0.5			106%		
DDE	1	1.0			100%		
Dieldrin	0.5	0.5			100%		
Endrin	0.5	0.5			102%		
DDD	1	1.0			100%		
Endosulfan 2	0.5	0.5			96%		
DDT	1	1.0			92%		
Endosulfan sulfate	0.5	0.5			100%		
Methoxychlor	0.5	0.5			100%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1080 Organochlorine Pesticides in Soil						
HCB	0.1	nd				
a-BHC	0.1	nd				
g-BHC	0.1	nd				
Heptachlor	0.1	nd				
Aldrin	0.1	nd				
b-BHC	0.1	nd				
d-BHC	0.1	nd				
Oxychlordane	0.1	nd				
Heptachlor epoxide	0.1	nd				
Endosulfan 1	0.1	nd				
Chlordane-Trans	0.1	nd				
Chlordane-Cis	0.1	nd				
trans-Nonachlor	0.1	nd				
DDE	0.1	nd				
Dieldrin	0.1	nd				
Endrin	0.1	nd				
DDD	0.1	nd				
Endosulfan 2	0.1	nd				
DDT	0.1	nd				
Endosulfan sulfate	0.1	nd				
Methoxychlor	0.1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E1120 Polychlorinated Biphenyls in Soil							
Aroclor 1016	-	--					
Aroclor 1221	-	--					
Aroclor 1232 & 1242 as total	-	--					
Aroclor 1248 & 1254 as total	-	--					
Aroclor 1260 & 1262 as total	10.00	11			109%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = < PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E1191

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E1120 Polychlorinated Biphenyls in Soil						
Aroclor 1016	1	nd				
Aroclor 1221	1	nd				
Aroclor 1232 & 1242 as total	1	nd				
Aroclor 1248 & 1254 as total	1	nd				
Aroclor 1260 & 1262 as total	1	nd				

PQL = Practical Quantitation Limit
nd = < PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited ABN 38 0081 27 802
Correspondence to: 99 Mitchell Rd
PO BOX 331 CARDIFF NSW 2285
HUNTER REGIONAL MAIL Telephone: (02) 4902 4800
CENTRE NSW 2310 Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Ms Anne Northway FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 29/03/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/30612-4
Project:	E12723/4 ARBA D
Our Reference Number :	5E1191
Date Received by Amdel :	29/03/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Moisture (%w/w)	E7500	27	
Volatile Organic Compounds	E1290	3	Amdel's turnaround times are typically 3-5 working days.
Benzene,Toluene,Ethylbenzene & Xylene	E1010	24	
TPH C6-C9 by Purge & Trap	E1230	27	
TPH (C10-C36)	E1221	27	
Metals by ICP-AES	E5910	27	
Mercury in Soil	E5950	27	
Polycyclic Aromatic Hydrocarbons	E1110	27	
Organochlorine Pesticides	E1080	3	
Polychlorinated Biphenyls in Soil, mg/k E1120		3	
Asbestos	E8110	14	
Samples on Hold (Soil)	E7500	21	

QCNOTE10

Sample integrity upon receipt

* Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
* Samples received in good condition and appropriately preserved for all tests.	YES
* VOC/SVOC samples were received in teflon lined lids.	YES
* VOC samples were received with Zero Headspace.	YES
* Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-conformance will be recorded on the final report.

AREA D

No: 30612

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 3

Coffey

Dispatch to: (Address & Phone No.) ANGEL	Sampled by: Adam Collis	Consigning Office: SYD Date Dispatched: 29/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Collis	29/3/05	10.15	K Duston	29/3/05	10.15
Mary Collins		10.15		29/3/05	1pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals											Sample Condition on Receipt
E187603	Soil	Glass, Unpreserved	CTP6 0.0-0.2	23/3/05															
04			" 0.5-0.6																
05			CTP7 0.0-0.2																
06			" 0.5-0.6																
07			CTP8 0.0-0.2				HOLD AND WAIT FOR												
08			" 0.8-1.0																
09			CTP10 0.0-0.1				INSTRUCTIONS												
10			" 0.5-0.7																
11			CTP11 1.2-1.4																
12			" 2.0-2.2																
13			CTP11 0.0-0.2																
14			" 0.3-0.4																
15			" 0.4-0.6																
16			CTP11 2.0-2.2																
17			CTP11 2.5-2.7																
18			CTP12 0.0-0.2																
19			" 1.0-1.2																

RECEIVED 29 MAR 2005 SYDNEY

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

AREA D

No: 30613

Chain of Custody

Coffey

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 2 of 3

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Gallic	Consigning Office: SYD Date Dispatched: 29/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gallic	29/3/05	10.15am	K Austin	29/3/05	10.15am
Adam Gallic					

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	14. Austin	Sample Condition on Receipt
E15629	Soil	Glass, Unpreserved	CTP12 2.3-2.6	23/3/05	HOLD AND WAIT FOR INSTRUCTIONS					2/3
21	↓	↓	DUP D15							
			DUP D16		SEND TO ALS					
22			TB D23/3/05							
23			TS D23/3/05		HOLD AND WAIT FOR INSTRUCTIONS					
24	Soil	Glass, Unpreserved	CTP13 0.0-0.2	24/3/05						
25			" 0.4-0.6							
26			" 0.7-0.9							
27			CTP14 0.0-0.1							
28			" 1.0-1.2							
29			" 1.3-1.4							
30			" 2.0-2.2							
31			CTP15 0.0-0.2							
32			" 1.0-1.2							
33			" 1.4-1.6							
34			" 1.6-1.8							
35	↓	↓	" 1.8-2.2	↓						

RECEIVED 29 MAR 2005

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

Chain of Custody

AREAD

No: 30614

Laboratory Quotation / Order No:

Job No: E12723/4

Sheet 3 of 3

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Adam Gellis	Consigning Office: SYD Date Dispatched: 29/3/05
Attention: Julie Edmon	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Gellis	29/3/05	12pm		29/3/05	10.15am
Adam Gellis		10.15	K. Austin 29/3/05		1pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
E15763	Soil	Glass, Unpreserved	CTP16 0.0-0.2	29/3/05					
37			" 1.0-1.2						
38			" 1.3-1.7						
39			CTP17 0.0-0.2				HOLD AND WAIT		
40			" 1.0-1.2				FOR INSTRUCTIONS		
41			" 2.0-2.2						
42			" 3.0-3.2						
43			" 3.8-4.0						
44			CTP18 0.0-0.2						
45			" 0.3-0.4						
46			" 1.0-1.2						
47			CTP19 0.0-0.2						
48			" 0.2-0.4						
49			" 1.0-1.3						
50		Plastic Bag	PACM CTP17 1.7						
51	Soil	Glass, Unpreserved	DUP D17						
	"	"	DUP D18		SEND TO ALS				

RECEIVED 29 MAR 2005 SYDNEY

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

Area	Sample ID	Date Collected	COMMENTS	Analysis								
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	PCB	Asbestos	SPOCAS
Area D	CTP1 0.0-0.2	22/03/2005										
	CTP1 1.0-1.2	22/03/2005		1				1				
	CTP1 1.9-2.2	22/03/2005		1				1				
	PACM CTP1 1.0	22/03/2005	Fibro								1	
	CTP2 0.0-0.2	22/03/2005		1				1			1	
	CTP2 1.0-1.2	22/03/2005										
	CTP2 2.0-2.2	22/03/2005										
	CTP2 3.0-3.2	22/03/2005		1				1				
	CTP3 0.0-0.2	22/03/2005										
	CTP3 1.0-1.2	22/03/2005		1				1			1	
	CTP3 2.0-2.2	22/03/2005		1				1				
	CTP4 0.0-0.2	22/03/2005										
	CTP4 1.0-1.2	22/03/2005		1				1				
	CTP4 2.0-2.2	22/03/2005		1				1			1	
	CTP5 0.0-0.2	22/03/2005		1				1			1	
	CTP5 1.0-1.2	22/03/2005										
	CTP5 2.0-2.2	22/03/2005		1				1				
	DUP 01	22/03/2005		1				1				
23/3/05	CTP6 0.0-0.2	23/03/2005		1 ✓				1 ✓			1	
04	CTP6 0.5-0.8	23/03/2005		1 ✓				1 ✓				
05	CTP7 0.0-0.2	23/03/2005		1 ✓				1 ✓			1	
06	CTP7 0.5-0.6	23/03/2005		1 ✓				1 ✓				
07	CTP8 0.0-0.2	23/03/2005		1 ✓				1 ✓			1	
08	CTP8 0.8-1.0	23/03/2005		1 ✓				1 ✓				
09	CTP10 0.0-0.1	23/03/2005										
10	CTP9 0.5-0.7	23/03/2005		1 ✓				1 ✓			1	
11	CTP9 1.2-1.4	23/03/2005										
12	CTP10 2.0-2.2	23/03/2005		1 ✓				1 ✓				
13	CTP11 0.0-0.2	23/03/2005										
14	CTP11 0.8-0.4	23/03/2005										
15	CTP11 0.5-0.6	23/03/2005		1 ✓				1 ✓			1	
16	CTP11 2.0-2.2	23/03/2005		1 ✓				1 ✓				
17	CTP11 2.5-2.7	23/03/2005										
18	CTP12 0.0-0.2	23/03/2005										
19	CTP12 1.0-1.2	23/03/2005		1 ✓				1 ✓	1 ✓	1 ✓	1	
20	CTP12 2.3-2.6	23/03/2005		1 ✓				1 ✓				

RECEIVED 30 MAR 2005 Selby

Area	Sample ID	Date Collected	COMMENTS	Analysis								
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	PCB	Asbestos	SPOCAS
[illegible]	DUP D15	23/03/2005										
23	TS D 23/3/05	23/03/2005										
24	TB D 23/3/05	23/03/2005										
24	CTP13 0.0-0.3	24/03/2005										
25	CTP13 0.4-0.6	24/03/2005					1 ✓✓	1 ✓			1	
26	CTP13 0.7-0.9	24/03/2005					1 ✓✓	1 ✓				
27	CTP14 0.0-0.2	24/03/2005										
28	CTP14 1.0-1.2	24/03/2005		1 ✓				1 ✓			1	
29	CTP14 1.3-1.4	24/03/2005										
30	CTP14 2.0-2.2	24/03/2005		1 ✓				1 ✓				
31	CTP15 0.0-0.2	24/03/2005		1 ✓				1 ✓	1 ✓	1 ✓	1	
32	CTP15 1.0-1.2	24/03/2005										
33	CTP15 1.3-1.6	24/03/2005										
34	CTP15 1.6-1.8	24/03/2005										
35	CTP15 1.8-2.2	24/03/2005		1 ✓				1 ✓				
36	CTP16 0.0-0.2	24/03/2005										
37	CTP16 1.0-1.2	24/03/2005		1 ✓				1 ✓			1	
38	CTP16 1.3-1.7	24/03/2005		1 ✓				1 ✓				
39	CTP17 0.0-0.2	24/03/2005										
40	CTP17 1.0-1.2	24/03/2005		1 ✓				1 ✓				
41	CTP17 2.0-2.2	24/03/2005										
SOIL	PACM CTP17 1.7	24/03/2005	asbo								1	
42	CTP17 3.0-3.2	24/03/2005										
43	CTP17 3.8-4.0	24/03/2005		1 ✓				1 ✓				
44	CTP18 0.0-0.2	24/03/2005		1 ✓				1 ✓			1	
45	CTP18 0.3-0.4	24/03/2005										
46	CTP18 1.0-1.2	24/03/2005		1 ✓				1 ✓				
47	CTP19 0.0-0.2	24/03/2005										
48	CTP19 0.2-0.4	24/03/2005		1 ✓				1 ✓	1 ✓	1 ✓	1	
49	CTP19 1.0-1.3	24/03/2005		1 ✓				1 ✓				
51	DUP D17	24/03/2005					1 ✓✓	1 ✓			1	
	TS D 22/3/05	22/03/2005			1							
	TB D 22/3/05	23/03/2005			1							
			No. of Analyses	35	2	0	3	38	3	3	19	0

30 MAR 2005 5E11191

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502042**
Project	:	- Not provided -	**Quote number**	:	---	**Date received**	: 17 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 29 Mar 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 4
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This final report for the ALSE work order reference ES0502042 supersedes any previous reports with this reference.
Results apply to the samples as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825
The Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	CH116_0.0-0.2	DUP4			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	10 Mar 2005 15:00	11 Mar 2005 15:00			
				Laboratory Sample ID :	ES0502042-001	ES0502042-002			
Analyte	*CAS number*	*LOR*	*Units*						
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		6.2	6.4			
Initial Weight		0.01	g		7.68	----			
Final Weight		0.01	g		7.20	----			
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5			
Cadmium	7440-43-9	1	mg/kg		<1	<1			
Chromium	7440-47-3	2	mg/kg		9	6			
Copper	7440-50-8	5	mg/kg		15	33			
Lead	7439-92-1	5	mg/kg		69	222			
Nickel	7440-02-0	2	mg/kg		<2	7			
Zinc	7440-66-6	5	mg/kg		59	143			
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.1	<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	----			
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		0.07	----			
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----			
4,4'-DDE	72-55-9	0.05	mg/kg		0.09	----			
Endrin	72-20-8	0.05	mg/kg		<0.05	----			
beta-Endosulfan	33213-65-9	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	----			

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: CH116_0.0-0.2 Sample Matrix Type / Description: SOIL / SOIL Sample Date / Time: 10 Mar 2005 15:00 Laboratory Sample ID: ES0502042-001	Client Sample ID: DUP4 Sample Matrix Type / Description: SOIL / SOIL Sample Date / Time: 11 Mar 2005 15:00 Laboratory Sample ID: ES0502042-002			
EP068A: Organochlorine Pesticides (OC)								
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	----			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5			
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5			
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5			
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5			
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	0.8			
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5			
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.3			
Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5			
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.1			
Chrysene	218-01-9	0.5	mg/kg	<0.5	0.8			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.6	1.3			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.0			
Indeno(1,2,3,cd)pyrene	193-39-5	0.5	mg/kg	<0.5	0.5			
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5			
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	0.7			
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		2	mg/kg	<2	<2			
C10 - C14 Fraction		50	mg/kg	<50	<50			
C15 - C28 Fraction		100	mg/kg	<100	<100			
C29 - C36 Fraction		100	mg/kg	<100	<100			
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2			
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2			
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2			
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2			
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2			
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE		0.1	%	91.8	----			
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	90.8	----			

ALS Environmental

Analytical Results

				Client Sample ID :	CH116_0.0-0.2	DUP4			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	10 Mar 2005 15:00	11 Mar 2005 15:00			
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0502042-001	ES0502042-002			
EP075(SIM)S: Phenolic Compound Surrogates									
2-Fluorophenol	367-12-4	0.1	%		82.2	93.3			
Phenol-d6	13127-88-3	0.1	%		102	77.6			
2-Chlorophenol-D4	93951-73-6	0.1	%		109	83.7			
2,4,6-Tribromophenol	118-79-6	0.1	%		76.7	61.5			
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		97.0	95.0			
Anthracene-d10	1719-06-8	0.1	%		77.5	78.8			
4-Terphenyl-d14	1718-51-0	0.1	%		96.2	95.7			
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		107	109			
Toluene-D8	2037-26-5	0.1	%		109	101			
4-Bromofluorobenzene	460-00-4	0.1	%		110	108			

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL

Surrogate Control Limits

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	25	121
	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

ALS Environmental

QUALITY CONTROL REPORT

Client	: **COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 12**
Contact	: MR STRIDER DUERINCK	**Contact**	: Greg Vogel			
Address	: 42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502042**
				Amendment No.	:	
Project	: - Not provided -	**Quote number**	: ----	**Date received**	:	17 Mar 2005
Order number	: - Not provided -			**Date issued**	:	29 Mar 2005
C-O-C number	: - Not provided -					
Site	: - Not provided -					
E-mail	: strider_duerinckx@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	: - Not provided -	**Telephone**	: 61-2-87848555	**Received**	:	4
Facsimile	: - Not provided -	**Facsimile**	: 61-2-87848500	**Analysed**	:	2

This final report for the ALSE work order reference ES0502042 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

The Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 53686)				%	%	%
ES0501756-001	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	7.9	8.7	9.8
ES0502047-001	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	14.9	15.0	1.1
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)				mg/kg	mg/kg	%
ES0502019-001	Anonymous	Arsenic	5 mg/kg	8	10	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	22	22	0.0
		Copper	5 mg/kg	8	9	0.0
		Lead	5 mg/kg	12	12	0.0
		Nickel	2 mg/kg	7440	8210	9.8
		Zinc	5 mg/kg	21	22	0.0
ES0502040-009	Anonymous	Arsenic	5 mg/kg	10	9	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	13	12	11.2
		Copper	5 mg/kg	6	6	0.0
		Lead	5 mg/kg	6	5	0.0
		Nickel	2 mg/kg	11	10	9.9
		Zinc	5 mg/kg	21	20	6.8
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 54279)				mg/kg	mg/kg	%
ES0502019-001	Anonymous	Mercury	0.1 mg/kg	0.2	0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 53461)				mg/kg	mg/kg	%
ES0502030-001	Anonymous	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0

ALS Environmental

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)				mg/kg	mg/kg	%
ES0502042-002	DUP4	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	0.8	0.6	30.2
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	1.3	1.0	23.1
		Pyrene	0.5 mg/kg	1.5	1.1	28.7
		Benz(a)anthracene	0.5 mg/kg	1.1	0.6	51.2
		Chrysene	0.5 mg/kg	0.8	<0.5	44.2
		Benzo(b)fluoranthene	0.5 mg/kg	1.3	1.0	26.2
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	1.0	0.7	33.3
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	0.7	0.5	24.5
ES0502057-006	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	1.2	1.2	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	1.7	1.1	36.9
		Anthracene	0.5 mg/kg	1.2	1.0	22.6
		Fluoranthene	0.5 mg/kg	10.7	5.8	60.0
		Pyrene	0.5 mg/kg	10.8	10.8	0.0
		Benz(a)anthracene	0.5 mg/kg	6.2	5.8	7.4
		Chrysene	0.5 mg/kg	5.1	5.0	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	8.2	7.6	8.6
		Benzo(k)fluoranthene	0.5 mg/kg	3.9	3.7	5.2
		Benzo(a)pyrene	0.5 mg/kg	6.7	5.4	21.6
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	3.0	2.7	8.9
		Dibenz(a,h)anthracene	0.5 mg/kg	1.1	1.0	11.9
		Benzo(g,h,i)perylene	0.5 mg/kg	3.4	3.2	8.3

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)				**mg/kg**	**mg/kg**	**%**
ES0502030-001	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
ES0502057-010	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)				***mg/kg***	**mg/kg**	**%**
ES0502042-002	DUP4	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0502057-006	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	440	200	74.5
		C29 - C36 Fraction	100 mg/kg	320	180	58.2
EP080: BTEX						
EP080: BTEX - (QC Lot: 53308)				**mg/kg**	**mg/kg**	**%**
ES0502030-001	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
ES0502057-010	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: SOIL

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)		mg/kg	mg/kg	%	%	%
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	107	70	130
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	96.1	70	130
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	108	70	130
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	106	70	130
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	103	70	130
Nickel	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	54.8	109	70	130
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	108	70	130
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 54279)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	104	70	130

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 53461)		mg/kg	mg/kg	%	%	%
alpha-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	83.2	77.5	109
Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	94.5	69.6	108
beta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	94.2	73.1	110
gamma-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	96.0	73.1	110
delta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	84.1	67.1	113
Heptachlor	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	82.1	74.8	107
Aldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	89.4	73.3	108
Heptachlor epoxide	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.6	74	108
trans-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.4	74.6	108
alpha-Endosulfan	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.9	71.5	112
cis-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	87.5	70.8	111
Dieldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.6	72.7	109
4,4'-DDE	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	88.5	73.6	107
Endrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	85.7	65.8	107
beta-Endosulfan	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	99.3	73.8	112
4,4'-DDD	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	87.6	72.4	109
Endrin aldehyde	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	90.2	72.2	114
Endosulfan sulfate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.8	68.5	115
4,4'-DDT	0.2 mg/kg	<0.2	----	----	----	----

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 53461)		mg/kg	mg/kg	%	%	%
4,4'-DDT	0.2 mg/kg	----	0.25	98.6	62.1	125
Endrin ketone	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	84.6	71.1	114
Methoxychlor	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	102	56.8	137

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)		mg/kg	mg/kg	%	%	%
Naphthalene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	87	103
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	103	85	107
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	96.9	87	105
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	92.4	85	105
Phenanthrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	96.4	85	113
Anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	104	88	107
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	87	105
Pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	102	75	105
Benz(a)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	104	85	100
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	82.4	84	111
Benzo(b)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	68	112
Benzo(k)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	82.5	70	129
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	83	108
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	97.9	76	110
Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	99.4	77	107
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	76	109

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	----	26	95.4	80	119
	2 mg/kg	<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	----	200	102	79	112
	50 mg/kg	<50	----	----	----	----
C15 - C28 Fraction	100 mg/kg	----	200	104	84	108
	100 mg/kg	<100	----	----	----	----
C29 - C36 Fraction	100 mg/kg	----	200	101	76	117
	100 mg/kg	<100	----	----	----	----
EP080: BTEX						
EP080: BTEX - (QC Lot: 53308)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	----	1	94.3	80	118
	0.2 mg/kg	<0.2	----	----	----	----
Toluene	0.2 mg/kg	----	1	100	81	119
	0.2 mg/kg	<0.2	----	----	----	----
Ethylbenzene	0.2 mg/kg	----	1	102	80	120
	0.2 mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	0.2 mg/kg	----	1	103	79	119
	0.2 mg/kg	<0.2	----	----	----	----
ortho-Xylene	0.2 mg/kg	----	1	101	80	119
	0.2 mg/kg	<0.2	----	----	----	----

ALS Environmental

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)				mg/kg	mg/kg	%	%	%
Arsenic	ES0502019-001	Anonymous	5 mg/kg	50	8	104	70	130
Cadmium			1 mg/kg	50	<1	81.0	70	130
Chromium			2 mg/kg	50	22	89.9	70	130
Copper			5 mg/kg	250	8	100	70	130
Lead			5 mg/kg	250	12	83.0	70	130
Nickel			2 mg/kg	50	7440	* Not Determined	70	130
Zinc			5 mg/kg	250	21	83.4	70	130
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 54279)				mg/kg	mg/kg	%	%	%
Mercury	ES0502019-001	Anonymous	0.1 mg/kg	5	0.2	104	70	130
EP068A: Organochlorine Pesticides (OC)								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 53461)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0502030-001	Anonymous	0.05 mg/kg	0.25	<0.05	80.8	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	85.1	72.2	106.71
Aldrin			0.05 mg/kg	0.25	<0.05	86.2	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	91.2	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	77.1	68.51	119.47
4,4'-DDT			0.2 mg/kg	1	<0.2	78.7	67.12	118.10
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0502057-006	Anonymous	0.5 mg/kg	10	<0.5	97.5	70	130
Pyrene			0.5 mg/kg	10	10.8	144	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0502030-001	Anonymous	2 mg/kg	26	<2	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0502057-006	Anonymous	50 mg/kg	700	<50	103	70	130

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
C15 - C28 Fraction	ES0502057-006	Anonymous	100 mg/kg	3400	440	83.7	70	130
C29 - C36 Fraction			100 mg/kg	3600	320	84.9	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 53308)				mg/kg	mg/kg	%	%	%
Benzene	ES0502030-001	Anonymous	0.2 mg/kg	2.5	<0.2	96.8	70	130
Toluene			0.2 mg/kg	2.5	<0.2	92.2	70	130
Ethylbenzene			0.2 mg/kg	2.5	<0.2	93.5	70	130
meta- & para-Xylene			0.2 mg/kg	2.5	<0.2	101	70	130
ortho-Xylene			0.2 mg/kg	2.5	<0.2	96.3	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502042**
						Amendment No.	:
Project	:	- Not provided -	**Quote number**	:	----	**Date received**	: 17 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 29 Mar 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 4
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This Interpretive Quality Control Report was issued on 29 Mar 2005 for the ALS work order reference ES0502042 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / *preparation* and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was *taken. Elapsed time* to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for *laboratory* produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	----	----	----	**21 Mar 2005**	17 Mar 2005	**Fail by 3 days**
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	----	----	----	**21 Mar 2005**	18 Mar 2005	**Fail by 2 days**
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**22 Mar 2005**	6 Sep 2005	Pass	**23 Mar 2005**	6 Sep 2005	Pass
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	**22 Mar 2005**	7 Sep 2005	Pass	**23 Mar 2005**	7 Sep 2005	Pass
EG035T: Total Mercury by FIMS							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**22 Mar 2005**	7 Apr 2005	Pass	**23 Mar 2005**	7 Apr 2005	Pass
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	**22 Mar 2005**	8 Apr 2005	Pass	**23 Mar 2005**	8 Apr 2005	Pass
EP068: Pesticides by GCMS							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**21 Mar 2005**	27 Apr 2005	Pass
EP071: TPH - Semivolatile Fraction							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**19 Mar 2005**	27 Apr 2005	Pass
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	**18 Mar 2005**	25 Mar 2005	Pass	**19 Mar 2005**	27 Apr 2005	Pass
EP075(SIM): PAH/Phenols (SIM)							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**21 Mar 2005**	27 Apr 2005	Pass
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	**18 Mar 2005**	25 Mar 2005	Pass	**21 Mar 2005**	27 Apr 2005	Pass
EP080: TPH Volatiles/BTEX							
Soil Glass Jar - Unpreserved CH116_0.0-0.2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**18 Mar 2005**	24 Mar 2005	Pass
Soil Glass Jar - Unpreserved DUP4	**11 Mar 2005**	**18 Mar 2005**	25 Mar 2005	Pass	**18 Mar 2005**	25 Mar 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	2	15	13.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	2	50.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	13	15.4	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	12	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	2	50.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	2	50.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	2	50.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

Matrix Type: SOIL

Summary of Outliers - Quality Control Samples

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Duplicates (DUP)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	ES0502057-006	Anonymous	Fluoranthene	60.0 %	0-50 %	RPD exceeds LOR based limits
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	56654-007	----	Fluoranthene	105 %	87-105 %	Recovery greater than upper control limit
				Benz(a)anthracene	104 %	85-100 %	Recovery greater than upper control limit
				Chrysene	82.4 %	84-111 %	Recovery less than lower control limit
Matrix Spikes (MS)							
EG005T: Total Metals by ICP-AES	SOIL	ES0502019-001	Anonymous	Nickel	ND	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	ES0502057-006	Anonymous	Pyrene	144 %	70-130 %	Recovery greater than upper data quality objective

- **For all matrices, no method blank result outliers occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Matrix Type: SOIL

Summary of Outliers - Analysis Holding times and Preservation

Method / **Container** / Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
CH116_0.0-0.2	**10 Mar 2005**	----	----	----	**21 Mar 2005**	17 Mar 2005	**Fail by 3 days**
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
DUP4	**11 Mar 2005**	----	----	----	**21 Mar 2005**	18 Mar 2005	**Fail by 2 days**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17A : Tumbler Extraction of Solids (Option A - Concentrating) - 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.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - 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.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EG035T : Total Mercury by FIMS - AS 3550, APHA 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. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the extract. 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.

EP068 : Pesticides by GCMS - (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 (1999) Schedule B(3) (Method 504,505)

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

***EP080* : TPH Volatiles/BTEX -** (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MR STRIDER DUERINCK**
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250
Project	:	**- Not provided -**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	strider_duerinckx@coffey.com.au
Telephone	:	- Not provided -
Facsimile	:	- Not provided -

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	---
Work order	:	**ES0502042**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	17 Mar 2005
SRA Issue Date	:	17 Mar 2005
Scheduled Reporting Date	:	**29 Mar 2005**

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**	:	----
No. of eskies/boxes	:	1 HARD	**No. of samples - Received**		4
Security Seal	:	Intact.	**- Analysed**		2

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502042
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 Moisture Content	**EP068A (solids)** Organochlorine Pesticides by GCMS	**S-02** 8 Metals (incl. Digestion)	**S-07** TPH/BTEX/PAH (SIM)						
ES0502042-001	**CH116_0.0-0.2 - 10 Mar 2005**	●	●	●	●						
ES0502042-002	**DUP4 - 11 Mar 2005**			●	●						
ES0502042-003	**D3 - 11 Mar 2005**										
ES0502042-004	**DUP2D - 14 Mar 2005**										
	Total(s) :	1	1	2	2						

A Campbell Brothers Limited Company

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502042
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Requested Reports

- **MR STRIDER DUERINCK**

- Certificate of Analysis (PDF)	Email	strider_duerinckx@coffey.com.au
- Interpretive Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
- Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
- ENMRG Export Format	Email	strider_duerinckx@coffey.com.au
- Chain of Custody Acknowledgement	Email	strider_duerinckx@coffey.com.au
- Sample Receipt Advice - Comprehensive	Email	strider_duerinckx@coffey.com.au
- Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

Area	Sample ID	Date Collected	COMMENTS	Analysis						
				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals	OCP	Asbestos	SPOCAS
Area D	ALS CBH116 0.0-0.2	(1) 10/03/2005	ALS	1			1	1		
	ALS D3	3 11/03/2005	ALS							
	ALS DUPD4	(2) 11/03/2005	ALS	1			1			
	DUP2D	4 14/03/2005	ALS							
			No. of Analyses	2		0	2	1	0	0

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

ALS Environmental
Sydney
Work Order
ES0502042

Report Version: WOLabel 1.00

Telephone : 61-2-87848555

FAO

17/3/05 12pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 4**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502044**
Project	:	- Not provided -	**Quote number**	:	----	**Date received**	: 17 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 29 Mar 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This final report for the ALSE work order reference ES0502044 supersedes any previous reports with this reference.
Results apply to the sample as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825
The Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Daniel Um	Inorganics - NATA 10911 (Sydney)
Daniel Um	Organics - NATA 10911 (Sydney)
Peter Dickenson	Inorganics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :				
				Sample Matrix Type / Description :	SOIL / SOIL			
				Sample Date / Time :	10 Mar 2005 15:00			
				Laboratory Sample ID :				
Analyte	*CAS number*	*LOR*	*Units*		ES0502044-001			
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%		13.8			
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg		<5			
Cadmium	7440-43-9	1	mg/kg		<1			
Chromium	7440-47-3	2	mg/kg		13			
Copper	7440-50-8	5	mg/kg		15			
Lead	7439-92-1	5	mg/kg		21			
Nickel	7440-02-0	2	mg/kg		14			
Zinc	7440-66-6	5	mg/kg		76			
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg		<0.1			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg		<0.5			
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5			
Acenaphthene	83-32-9	0.5	mg/kg		<0.5			
Fluorene	86-73-7	0.5	mg/kg		<0.5			
Phenanthrene	85-01-8	0.5	mg/kg		2.8			
Anthracene	120-12-7	0.5	mg/kg		0.6			
Fluoranthene	206-44-0	0.5	mg/kg		2.0			
Pyrene	129-00-0	0.5	mg/kg		2.5			
Benz(a)anthracene	56-55-3	0.5	mg/kg		1.1			
Chrysene	218-01-9	0.5	mg/kg		0.9			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		1.0			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		0.8			
Indeno(1,2,3,cd)pyrene	193-39-5	0.5	mg/kg		<0.5			
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5			
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		0.5			
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		2	mg/kg		<2			
C10 - C14 Fraction		50	mg/kg		<50			
C15 - C28 Fraction		100	mg/kg		<100			

ALS Environmental

Analytical Results

			Client Sample ID :	**DUPB2**				
			Sample Matrix Type / Description :	SOIL / SOIL				
			Sample Date / Time :	10 Mar 2005 15:00				
			Laboratory Sample ID :	**ES0502044-001**				
Analyte	***CAS number***	***LOR***	***Units***					
EP080/071: Total Petroleum Hydrocarbons								
C29 - C36 Fraction		100	mg/kg	<100				
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2				
Toluene	108-88-3	0.2	mg/kg	<0.2				
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2				
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2				
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2				
EP075(SIM)S: Phenolic Compound Surrogates								
2-Fluorophenol	367-12-4	0.1	%	97.0				
Phenol-d6	13127-88-3	0.1	%	94.6				
2-Chlorophenol-D4	93951-73-6	0.1	%	95.6				
2,4,6-Tribromophenol	118-79-6	0.1	%	50.0				
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	99.4				
Anthracene-d10	1719-06-8	0.1	%	104				
4-Terphenyl-d14	1718-51-0	0.1	%	94.8				
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	105				
Toluene-D8	2037-26-5	0.1	%	108				
4-Bromofluorobenzene	460-00-4	0.1	%	94.7				

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL

Surrogate Control Limits

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	25	121
	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 9**
Contact	:	MR STRIDER DUERINCK	**Contact**	: Greg Vogel			
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502044**
					Amendment No.	:	
Project	:	- Not provided -	**Quote number**	: ----	**Date received**	:	17 Mar 2005
Order number	:	- Not provided -			**Date issued**	:	29 Mar 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	- Not provided -	**Telephone**	: 61-2-87848555	**Received**	:	1
Facsimile	:	- Not provided -	**Facsimile**	: 61-2-87848500	**Analysed**	:	1

This final report for the ALSE work order reference ES0502044 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

The Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Daniel Um	Inorganics - NATA 10911 (Sydney)
Daniel Um	Organics - NATA 10911 (Sydney)
Peter Dickenson	Inorganics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
***EA055: Moisture Content* - (QC Lot: 53686)**				%	%	%
ES0501756-001	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	7.9	8.7	9.8
ES0502047-001	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	14.9	15.0	1.1
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)				mg/kg	mg/kg	%
ES0502019-001	Anonymous	Arsenic	5 mg/kg	8	10	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	22	22	0.0
		Copper	5 mg/kg	8	9	0.0
		Lead	5 mg/kg	12	12	0.0
		Nickel	2 mg/kg	7440	8210	9.8
		Zinc	5 mg/kg	21	22	0.0
ES0502040-009	Anonymous	Arsenic	5 mg/kg	10	9	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	13	12	11.2
		Copper	5 mg/kg	6	6	0.0
		Lead	5 mg/kg	6	5	0.0
		Nickel	2 mg/kg	11	10	9.9
		Zinc	5 mg/kg	21	20	6.8
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 54279)				mg/kg	mg/kg	%
ES0502019-001	Anonymous	Mercury	0.1 mg/kg	0.2	0.2	0.0

ALS Environmental

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)				mg/kg	mg/kg	%
ES0502042-002	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	0.8	0.6	30.2
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	1.3	1.0	23.1
		Pyrene	0.5 mg/kg	1.5	1.1	28.7
		Benz(a)anthracene	0.5 mg/kg	1.1	0.6	51.2
		Chrysene	0.5 mg/kg	0.8	<0.5	44.2
		Benzo(b)fluoranthene	0.5 mg/kg	1.3	1.0	26.2
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	1.0	0.7	33.3
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	0.7	0.5	24.5
ES0502057-006	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	1.2	1.2	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	1.7	1.1	36.9
		Anthracene	0.5 mg/kg	1.2	1.0	22.6
		Fluoranthene	0.5 mg/kg	10.7	5.8	60.0
		Pyrene	0.5 mg/kg	10.8	10.8	0.0
		Benz(a)anthracene	0.5 mg/kg	6.2	5.8	7.4
		Chrysene	0.5 mg/kg	5.1	5.0	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	8.2	7.6	8.6
		Benzo(k)fluoranthene	0.5 mg/kg	3.9	3.7	5.2
		Benzo(a)pyrene	0.5 mg/kg	6.7	5.4	21.6
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	3.0	2.7	8.9
		Dibenz(a,h)anthracene	0.5 mg/kg	1.1	1.0	11.9
		Benzo(g,h,i)perylene	0.5 mg/kg	3.4	3.2	8.3

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)				mg/kg	mg/kg	%
ES0502030-001	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
ES0502057-010	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)				mg/kg	mg/kg	%
ES0502042-002	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0502057-006	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	440	200	74.5
		C29 - C36 Fraction	100 mg/kg	320	180	58.2
EP080: BTEX						
EP080: BTEX - (QC Lot: 53308)				mg/kg	mg/kg	%
ES0502030-001	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
ES0502057-010	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: SOIL

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)		mg/kg	mg/kg	%	%	%
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	107	70	130
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	96.1	70	130
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	108	70	130
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	106	70	130
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	103	70	130
Nickel	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	54.8	109	70	130
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	108	70	130
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 54279)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	104	70	130

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)		mg/kg	mg/kg	%	%	%
Naphthalene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	87	103
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	103	85	107
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	96.9	87	105
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	92.4	85	105
Phenanthrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	96.4	85	113
Anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	104	88	107
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	87	105
Pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	102	75	105
Benz(a)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	104	85	100
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	82.4	84	111
Benzo(b)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	68	112
Benzo(k)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	82.5	70	129
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	83	108
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	97.9	76	110
Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	99.4	77	107
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	76	109

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	----	26	95.4	80	119
	2 mg/kg	<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	----	200	102	79	112
	50 mg/kg	<50	----	----	----	----
C15 - C28 Fraction	100 mg/kg	----	200	104	84	108
	100 mg/kg	<100	----	----	----	----
C29 - C36 Fraction	100 mg/kg	----	200	101	76	117
	100 mg/kg	<100	----	----	----	----
EP080: BTEX						
EP080: BTEX - (QC Lot: 53308)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	----	1	94.3	80	118
	0.2 mg/kg	<0.2	----	----	----	----
Toluene	0.2 mg/kg	----	1	100	81	119
	0.2 mg/kg	<0.2	----	----	----	----
Ethylbenzene	0.2 mg/kg	----	1	102	80	120
	0.2 mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	0.2 mg/kg	----	1	103	79	119
	0.2 mg/kg	<0.2	----	----	----	----
ortho-Xylene	0.2 mg/kg	----	1	101	80	119
	0.2 mg/kg	<0.2	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 54278)				mg/kg	mg/kg	%	%	%
Arsenic	ES0502019-001	Anonymous	5 mg/kg	50	8	104	70	130
Cadmium			1 mg/kg	50	<1	81.0	70	130
Chromium			2 mg/kg	50	22	89.9	70	130
Copper			5 mg/kg	250	8	100	70	130
Lead			5 mg/kg	250	12	83.0	70	130
Nickel			2 mg/kg	50	7440	* Not Determined	70	130
Zinc			5 mg/kg	250	21	83.4	70	130
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 54279)				mg/kg	mg/kg	%	%	%
Mercury	ES0502019-001	Anonymous	0.1 mg/kg	5	0.2	104	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 53391)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0502057-006	Anonymous	0.5 mg/kg	10	<0.5	97.5	70	130
Pyrene			0.5 mg/kg	10	10.8	144	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53308)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0502030-001	Anonymous	2 mg/kg	26	<2	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 53390)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0502057-006	Anonymous	50 mg/kg	700	<50	103	70	130
C15 - C28 Fraction			100 mg/kg	3400	440	83.7	70	130
C29 - C36 Fraction			100 mg/kg	3600	320	84.9	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 53308)				mg/kg	mg/kg	%	%	%
Benzene	ES0502030-001	Anonymous	0.2 mg/kg	2.5	<0.2	96.8	70	130
Toluene			0.2 mg/kg	2.5	<0.2	92.2	70	130
Ethylbenzene			0.2 mg/kg	2.5	<0.2	93.5	70	130
meta- & para-Xylene			0.2 mg/kg	2.5	<0.2	101	70	130

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
ortho-Xylene	ES0502030-001	Anonymous	0.2 mg/kg	2.5	<0.2	96.3	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502044**
						Amendment No.	:
Project	:	- Not provided -	**Quote number**	:	----	**Date received**	: 17 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 29 Mar 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This Interpretive Quality Control Report was issued on 29 Mar 2005 for the ALS work order reference ES0502044 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	----	----	----	**21 Mar 2005**	17 Mar 2005	**Fail by 3 days**
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	**22 Mar 2005**	6 Sep 2005	Pass	**23 Mar 2005**	6 Sep 2005	Pass
EG035T: Total Mercury by FIMS							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	**22 Mar 2005**	7 Apr 2005	Pass	**23 Mar 2005**	7 Apr 2005	Pass
EP071: TPH - Semivolatile Fraction							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**19 Mar 2005**	27 Apr 2005	Pass
EP075(SIM): PAH/Phenols (SIM)							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**21 Mar 2005**	27 Apr 2005	Pass
EP080: TPH Volatiles/BTEX							
Soil Glass Jar - Unpreserved							
DUPB2	**10 Mar 2005**	**18 Mar 2005**	24 Mar 2005	Pass	**18 Mar 2005**	24 Mar 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	2	15	13.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	13	15.4	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	12	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	13	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

Matrix Type: SOIL

Summary of Outliers - Quality Control Samples

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Duplicates (DUP)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	ES0502057-006	Anonymous	Fluoranthene	60.0 %	0-50 %	RPD exceeds LOR based limits
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	56654-007	----	Fluoranthene	105 %	87-105 %	Recovery greater than upper control limit
				Benz(a)anthracene	104 %	85-100 %	Recovery greater than upper control limit
				Chrysene	82.4 %	84-111 %	Recovery less than lower control limit
Matrix Spikes (MS)							
EG005T: Total Metals by ICP-AES	SOIL	ES0502019-001	Anonymous	Nickel	ND	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	ES0502057-006	Anonymous	Pyrene	144 %	70-130 %	Recovery greater than upper data quality objective

- **For all matrices, no method blank result outliers occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Matrix Type: SOIL

Summary of Outliers - Analysis Holding times and Preservation

Method / **Container** / Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved DUPB2	**10 Mar 2005**	----	----	----	**21 Mar 2005**	17 Mar 2005	**Fail by 3 days**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - 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.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EG035T : Total Mercury by FIMS - AS 3550, APHA 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. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the extract. 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.

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MR STRIDER DUERINCK**
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250
Project	:	**- Not provided -**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	strider_duerinckx@coffey.com.au
Telephone	:	- Not provided -
Facsimile	:	- Not provided -

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502044**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	17 Mar 2005
SRA Issue Date	:	17 Mar 2005
Scheduled Reporting Date	:	**29 Mar 2005**

Delivery Details

Mode of Delivery	:	Carrier.	Temperature	: ----
No. of eskies/boxes	:	1 HARD	No. of samples - Received	1
Security Seal	:	Intact.	- Analysed	1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502044
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		S-02 8 Metals (incl. Digestion)	**S-07** TPH/BTEX/PAH (SIM)								
ES0502044-001	DUPB2 - 10 Mar 2005	●	●								
	Total(s) :	1	1								

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502044
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Requested Reports

- **MR STRIDER DUERINCK**

- Certificate of Analysis (PDF)	Email	strider_duerinckx@coffey.com.au
- Interpretive Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
- Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
- ENMRG Export Format	Email	strider_duerinckx@coffey.com.au
- Chain of Custody Acknowledgement	Email	strider_duerinckx@coffey.com.au
- Sample Receipt Advice - Comprehensive	Email	strider_duerinckx@coffey.com.au
- Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

Area	Sample ID	Date Collected	Comments	Analysis						
				TPH/BTEX/PAH	BTEX	TPH/VOC/PAH	8 Metals*	OCP	OPP	Asbestos
Area B	DUPB2	10/03/2005	ALS	1			1			
			No. of Analyses	1	0	0	1	0	0	0

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

ALS Environmental
Sydney
Work Order
ES0502044

Report Version: WOLabel 1.00

Telephone : 61-2-87848555

FADI

12/3/05 12pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 4**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502202**
Project	:	E12723/4	**Quote number**	:	SY/503/03 V2	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 5 Apr 2005
C-O-C number	:	31192					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This final report for the ALSE work order reference ES0502202 supersedes any previous reports with this reference.
Results apply to the sample as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Celine Conceicao	Inorganics - NATA 10911 (Sydney)
Nanthini Coilparampil	Inorganics - NATA 10911 (Sydney)
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	**DUP 1**			
				Sample Matrix Type / Description :	WATER / WATER			
				Sample Date / Time :	22 Mar 2005 15:00			
				Laboratory Sample ID :	**ES0502202-001**			
Analyte	***CAS number***	***LOR***	***Units***					
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L		<0.001			
Cadmium	7440-43-9	0.0001	mg/L		<0.0001			
Chromium	7440-47-3	0.001	mg/L		0.002			
Copper	7440-50-8	0.001	mg/L		0.002			
Lead	7439-92-1	0.001	mg/L		<0.001			
Nickel	7440-02-0	0.001	mg/L		<0.001			
Zinc	7440-66-6	0.005	mg/L		<0.005			
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L		<0.0001			
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.010	mg/L		0.053			
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0.010	mg/L		<0.010			
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.010	mg/L		<0.010			
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N		0.010	mg/L		<0.010			
EK061: Total Kjeldahl Nitrogen (TKN)								
Total Kjeldahl Nitrogen as N		0.1	mg/L		0.7			
EK067: Total Phosphorus as P								
Total Phosphorus as P		0.01	mg/L		0.02			
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			

ALS Environmental

Analytical Results

				Client Sample ID :	DUP 1			
				Sample Matrix Type / Description :	WATER / WATER			
				Sample Date / Time :	22 Mar 2005 15:00			
				Laboratory Sample ID :	ES0502202-001			
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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			
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			
EP080: BTEX								
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			
EP075(SIM)S: Phenolic Compound Surrogates								
2-Fluorophenol	367-12-4	0.1	%		41.5			
Phenol-d6	13127-88-3	0.1	%		39.3			
2-Chlorophenol-D4	93951-73-6	0.1	%		92.3			
2,4,6-Tribromophenol	118-79-6	0.1	%		98.4			
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%		88.8			
Anthracene-d10	1719-06-8	0.1	%		61.4			
4-Terphenyl-d14	1718-51-0	0.1	%		93.6			
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%		102			
Toluene-D8	2037-26-5	0.1	%		98.2			
4-Bromofluorobenzene	460-00-4	0.1	%		99.5			

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: WATER

Surrogate Control Limits

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	21	100
	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 10**
Contact	:	MS ANNE NORTHWAY	**Contact**	: Greg Vogel			
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502202**
					Amendment No.	:	
Project	:	E12723/4	**Quote number**	: SY/503/03 V2	**Date received**	:	22 Mar 2005
Order number	:	- Not provided -			**Date issued**	:	5 Apr 2005
C-O-C number	:	31192					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	(02)9911-1000	**Telephone**	: 61-2-87848555	**Received**	:	1
Facsimile	:	(02)9911-1001	**Facsimile**	: 61-2-87848500	**Analysed**	:	1

This final report for the ALSE work order reference ES0502202 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Celine Conceicao	Inorganics - NATA 10911 (Sydney)
Nanthini Coilparampil	Inorganics - NATA 10911 (Sydney)
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EG020F: Dissolved Metals by ICP-MS						
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 55542)				mg/L	mg/L	%
ES0502202-001	DUP 1	Arsenic	0.001 mg/L	<0.001	<0.001	0.0
		Cadmium	0.0001 mg/L	<0.0001	<0.0001	0.0
		Chromium	0.001 mg/L	0.002	0.002	0.0
		Copper	0.001 mg/L	0.002	0.002	0.0
		Lead	0.001 mg/L	<0.001	<0.001	0.0
		Nickel	0.001 mg/L	<0.001	<0.001	0.0
		Zinc	0.005 mg/L	<0.005	<0.005	0.0
ES0502220-005	Anonymous	Arsenic	0.001 mg/L	<0.001	<0.001	0.0
		Cadmium	0.0001 mg/L	0.0002	0.0002	0.0
		Chromium	0.001 mg/L	0.003	0.003	0.0
		Copper	0.001 mg/L	0.002	0.002	0.0
		Lead	0.001 mg/L	0.007	0.008	0.0
		Nickel	0.001 mg/L	0.004	0.004	0.0
		Zinc	0.005 mg/L	0.224	0.226	1.0
EG035F: Dissolved Mercury by FIMS						
EG035F: Dissolved Mercury by FIMS - (QC Lot: 55468)				mg/L	mg/L	%
ES0502172-001	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
ES0502190-005	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
EK055G: Ammonia as N by Discrete Analyser						
EK055G: Ammonia as N by Discrete Analyser - (QC Lot: 56315)				mg/L	mg/L	%
ES0502184-002	Anonymous	Ammonia as N	0.010 mg/L	0.152	0.154	1.3
ES0502199-007	Anonymous	Ammonia as N	0.010 mg/L	0.010	<0.010	0.0
EK057G: Nitrite as N by Discrete Analyser						
EK057G: Nitrite as N by Discrete Analyser - (QC Lot: 54736)				mg/L	mg/L	%
ES0502153-001	Anonymous	Nitrite as N	0.010 mg/L	0.012	<0.010	18.2
ES0502190-002	Anonymous	Nitrite as N	0.010 mg/L	0.018	0.019	5.4
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 54734)				mg/L	mg/L	%
ES0502153-001	Anonymous	Nitrite + Nitrate as N	0.010 mg/L	0.599	0.589	1.7
ES0502174-002	Anonymous	Nitrite + Nitrate as N	0.010 mg/L	0.311	0.282	9.8

ALS Environmental

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EK061: Total Kjeldahl Nitrogen (TKN)						
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 56444)				mg/L	mg/L	%
ES0502202-001	DUP 1	Total Kjeldahl Nitrogen as N	0.1 mg/L	0.7	0.8	0.0
ES0502258-002	Anonymous	Total Kjeldahl Nitrogen as N	0.1 mg/L	0.4	0.4	0.0
EK067: Total Phosphorus as P						
EK067: Total Phosphorus as P - (QC Lot: 56445)				mg/L	mg/L	%
ES0502202-001	DUP 1	Total Phosphorus as P	0.01 mg/L	0.02	0.04	66.7
ES0502258-002	Anonymous	Total Phosphorus as P	0.01 mg/L	<0.01	<0.01	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 54698)				µg/L	µg/L	%
ES0502190-002	Anonymous	Naphthalene	0.5 µg/L	35.8	34.5	3.8
		Acenaphthylene	0.5 µg/L	<0.5	<0.5	0.0
		Acenaphthene	0.5 µg/L	9.7	9.4	3.3
		Fluorene	0.5 µg/L	5.9	5.6	4.7
		Phenanthrene	0.5 µg/L	3.0	2.8	7.3
		Anthracene	0.5 µg/L	<0.5	<0.5	0.0
		Fluoranthene	0.5 µg/L	2.6	2.6	0.0
		Pyrene	0.5 µg/L	2.9	3.1	7.0
		Benz(a)anthracene	0.5 µg/L	0.9	1.0	0.0
		Chrysene	0.5 µg/L	0.8	0.9	0.0
		Benzo(b)fluoranthene	0.5 µg/L	0.6	0.7	0.0
		Benzo(k)fluoranthene	0.5 µg/L	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 µg/L	0.7	0.7	0.0
		Indeno(1,2,3,cd)pyrene	0.5 µg/L	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 µg/L	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 µg/L	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54700)				µg/L	µg/L	%
ES0502190-002	Anonymous	C10 - C14 Fraction	50 µg/L	4890	5360	9.1
		C15 - C28 Fraction	100 µg/L	4400	4600	6.1
		C29 - C36 Fraction	50 µg/L	290	280	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54826)				µg/L	µg/L	%
ES0502152-001	Anonymous	C6 - C9 Fraction	20 µg/L	<20	<20	0.0
ES0502152-008	Anonymous	C6 - C9 Fraction	20 µg/L	<20	<20	0.0

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080: BTEX						
EP080: BTEX - (QC Lot: 54826)				µg/L	µg/L	%
ES0502152-001	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0
ES0502152-008	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: WATER

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG020F: Dissolved Metals by ICP-MS						
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 55542)		mg/L	mg/L	%	%	%
Arsenic	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	95.4	70	130
Cadmium	0.0001 mg/L	<0.0001	----	----	----	----
	0.0001 mg/L	----	0.1	97.3	70	130
Chromium	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	88.1	70	130
Copper	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	94.9	70	130
Lead	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	98.6	70	130
Nickel	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	96.2	70	130
Zinc	0.005 mg/L	<0.005	----	----	----	----
	0.005 mg/L	----	0.1	91.5	70	130
EG035F: Dissolved Mercury by FIMS						
EG035F: Dissolved Mercury by FIMS - (QC Lot: 55468)		mg/L	mg/L	%	%	%
Mercury	0.0001 mg/L	<0.0001	----	----	----	----
	0.0001 mg/L	----	0.010	87.7	70	130
EK055G: Ammonia as N by Discrete Analyser						
EK055G: Ammonia as N by Discrete Analyser - (QC Lot: 56315)		mg/L	mg/L	%	%	%
Ammonia as N	0.010 mg/L	<0.010	----	----	----	----
	0.01 mg/L	----	1.00	112	70	130
EK057G: Nitrite as N by Discrete Analyser						
EK057G: Nitrite as N by Discrete Analyser - (QC Lot: 54736)		mg/L	mg/L	%	%	%
Nitrite as N	0.010 mg/L	<0.010	----	----	----	----
	0.01 mg/L	----	0.96	95.3	70	130
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 54734)		mg/L	mg/L	%	%	%
Nitrite + Nitrate as N	0.01 mg/L	----	0.96	99.6	70	130
	0.010 mg/L	<0.010	----	----	----	----

ALS Environmental

Matrix Type: WATER

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EK061: Total Kjeldahl Nitrogen (TKN)						
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 56444)		mg/L	mg/L	%	%	%
Total Kjeldahl Nitrogen as N	0.1 mg/L	<0.1	----	----	----	----
	0.1 mg/L	----	10.0	87.2	70	130
EK067: Total Phosphorus as P						
EK067: Total Phosphorus as P - (QC Lot: 56445)		mg/L	mg/L	%	%	%
Total Phosphorus as P	0.01 mg/L	<0.01	----	----	----	----
	0.01 mg/L	----	4.42	94.6	70	130

Matrix Type: WATER

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 54698)		µg/L	µg/L	%	%	%
Naphthalene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	97.6	72	111
Acenaphthylene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	98.5	77	110
Acenaphthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	96.9	74	111
Fluorene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	97.4	73	110
Phenanthrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	96.0	75	112
Anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	95.0	77	107
Fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	94.0	70	113
Pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	93.0	65	109
Benz(a)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	92.8	78	107
Chrysene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	98.0	76	109
Benzo(b)fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	92.9	55	118
Benzo(k)fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	102	67	114
Benzo(a)pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	92.8	73	112
Indeno(1,2,3,cd)pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	92.9	68	109
Dibenz(a,h)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	93.4	66	109
Benzo(g,h,i)perylene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	94.5	66	107

Matrix Type: WATER

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54700)		µg/L	µg/L	%	%	%
C10 - C14 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	99.5	75	134
C15 - C28 Fraction	100 µg/L	<100	----	----	----	----
	100 µg/L	----	200	93.9	87	132
C29 - C36 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	109	80	126
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54826)		µg/L	µg/L	%	%	%
C6 - C9 Fraction	20 µg/L	<20	----	----	----	----
	20 µg/L	----	260	94.7	80	120
EP080: BTEX						
EP080: BTEX - (QC Lot: 54826)		µg/L	µg/L	%	%	%
Benzene	1 µg/L	<1	----	----	----	----
	1 µg/L	----	10	96.7	78	125
Toluene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	94.6	74	126
Ethylbenzene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	98.5	73	118
meta- & para-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	97.8	78	117
ortho-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	98.3	75	119

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG020F: Dissolved Metals by ICP-MS								
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 55542)				mg/L	mg/L	%	%	%
Arsenic	ES0502202-001	DUP 1	0.001 mg/L	0.2	<0.001	103	70	130
Cadmium			0.0001 mg/L	0.05	<0.0001	99.7	70	130
Chromium			0.001 mg/L	0.2	0.002	98.7	70	130
Copper			0.001 mg/L	0.2	0.002	98.1	70	130
Lead			0.001 mg/L	0.2	<0.001	91.8	70	130
Nickel			0.001 mg/L	0.2	<0.001	100	70	130
Zinc			0.005 mg/L	0.2	<0.005	99.0	70	130
EG035F: Dissolved Mercury by FIMS								
EG035F: Dissolved Mercury by FIMS - (QC Lot: 55468)				mg/L	mg/L	%	%	%
Mercury	ES0502172-001	Anonymous	0.0001 mg/L	0.0100	<0.0001	79.6	70	130
EK055G: Ammonia as N by Discrete Analyser								
EK055G: Ammonia as N by Discrete Analyser - (QC Lot: 56315)				mg/L	mg/L	%	%	%
Ammonia as N	ES0502184-002	Anonymous	0.01 mg/L	1.00	0.152	113	70	130
EK057G: Nitrite as N by Discrete Analyser								
EK057G: Nitrite as N by Discrete Analyser - (QC Lot: 54736)				mg/L	mg/L	%	%	%
Nitrite as N	ES0502153-001	Anonymous	0.01 mg/L	0.60	0.012	102	70	130
EK059G: NOX as N by Discrete Analyser								
EK059G: NOX as N by Discrete Analyser - (QC Lot: 54734)				mg/L	mg/L	%	%	%
Nitrite + Nitrate as N	ES0502153-001	Anonymous	0.01 mg/L	0.60	0.599	96.3	70	130
EK061: Total Kjeldahl Nitrogen (TKN)								
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 56444)				mg/L	mg/L	%	%	%
Total Kjeldahl Nitrogen as N	ES0502202-001	DUP 1	0.1 mg/L	5.0	0.7	87.0	70	130
EK067: Total Phosphorus as P								
EK067: Total Phosphorus as P - (QC Lot: 56445)				mg/L	mg/L	%	%	%
Total Phosphorus as P	ES0502202-001	DUP 1	0.01 mg/L	1.00	0.02	118	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 54698)				µg/L	µg/L	%	%	%

ALS Environmental

Matrix Type: WATER

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
Acenaphthene	ES0502202-001	DUP 1	0.5 µg/L	20	<1.0	72.8	70	130
Pyrene			0.5 µg/L	20	<1.0	52.9	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54700)				µg/L	µg/L	%	%	%
C10 - C14 Fraction	ES0502202-001	DUP 1	50 µg/L	200	<50	110	70	130
C15 - C28 Fraction			100 µg/L	200	<100	118	70	130
C29 - C36 Fraction			50 µg/L	200	<50	107	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 54826)				µg/L	µg/L	%	%	%
C6 - C9 Fraction	ES0502152-002	Anonymous	20 µg/L	250	<20	90.0	80	120
EP080: BTEX								
EP080: BTEX - (QC Lot: 54826)				µg/L	µg/L	%	%	%
Benzene	ES0502152-002	Anonymous	1 µg/L	25	<1	92.5	80	120
Toluene			2 µg/L	25	<2	100	80	120
Ethylbenzene			2 µg/L	25	<2	102	80	120
meta- & para-Xylene			2 µg/L	25	<2	92.6	80	120
ortho-Xylene			2 µg/L	25	<2	96.7	80	120

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 7**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502202**
						Amendment No.	:
Project	:	E12723/4	**Quote number**	:	SY/503/03 V2	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 5 Apr 2005
C-O-C number	:	31192					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This Interpretive Quality Control Report was issued on 5 Apr 2005 for the ALS work order reference ES0502202 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: WATER

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG020A-F: Dissolved Metals by ICP-MS - Suite A							
Clear Plastic Bottle - Nitric Acid; Filtered							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**29 Mar 2005**	18 Sep 2005	Pass
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**29 Mar 2005**	19 Apr 2005	Pass
EK055G: Ammonia as N by Discreate analyser							
Amber Glass Bottle - Sulphuric Acid							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**30 Mar 2005**	19 Apr 2005	Pass
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**23 Mar 2005**	24 Mar 2005	Pass
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**23 Mar 2005**	24 Mar 2005	Pass
EK061: Total Kjeldahl Nitrogen as N							
Amber Glass Bottle - Sulphuric Acid							
DUP 1	**22 Mar 2005**	**1 Apr 2005**	19 Apr 2005	Pass	**31 Mar 2005**	19 Apr 2005	Pass
EK067: Total Phosphorus as P							
Amber Glass Bottle - Sulphuric Acid							
DUP 1	**22 Mar 2005**	**1 Apr 2005**	19 Apr 2005	Pass	**31 Mar 2005**	19 Apr 2005	Pass
EP071: TPH - Semivolatile Fraction							
Amber Glass Bottle - Unpreserved							
DUP 1	**22 Mar 2005**	**23 Mar 2005**	29 Mar 2005	Pass	**29 Mar 2005**	2 May 2005	Pass
EP075(SIM): PAH/Phenols (GC/MS - SIM)							
Amber Glass Bottle - Unpreserved							
DUP 1	**22 Mar 2005**	**23 Mar 2005**	29 Mar 2005	Pass	**24 Mar 2005**	2 May 2005	Pass
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl							
DUP 1	**22 Mar 2005**	**----**	**----**	**----**	**23 Mar 2005**	5 Apr 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: WATER ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	2	15	13.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser	2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK057G: Nitrite as N by Discrete Analyser	2	14	14.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser	2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK067: Total Phosphorus as P	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	6	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	2	11	18.2	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK057G: Nitrite as N by Discrete Analyser	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK067: Total Phosphorus as P	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK057G: Nitrite as N by Discrete Analyser	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK067: Total Phosphorus as P	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: WATER ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	15	6.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK057G: Nitrite as N by Discrete Analyser	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser	1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK067: Total Phosphorus as P	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

Matrix Type: WATER

Summary of Outliers - Quality Control Samples

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Matrix Spikes (MS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	WATER	ES0502202-001	DUP 1	Pyrene	52.9 %	70-130 %	Recovery less than lower data quality objective

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: WATER ***Method Reference Summary***

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg - D; APHA 20th ed., 4500 P - H. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

ORG14 : Separatory Funnel Extraction of Liquids - USEPA SW 846 - 3510B 500 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 (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Analytical Methods

EG020A-F : Dissolved Metals by ICP-MS - Suite A - (APHA 20th ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): 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.

EG035F : Dissolved Mercury by FIMS - AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) 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 (1999) Schedule B(3) (Appdx. 2)

EK055G : Ammonia as N by Discreate analyser - APHA 20th ed., 4500 NH3+-H Ammonia is determined by direct colorimetry by Seal. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK057G : Nitrite as N by Discrete Analyser - APHA 20th ed., 4500 NO3- I. SEAL Method 2-018-1-L February 2003. Nitrite is determined by direct colourimetry by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK058G : Nitrate as N by Discrete Analyser - APHA 20th ed., 4500 NO3--I. SEAL Method 2-018-1-L February 2003. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by SEAL. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK059G : Nitrite and Nitrate as N (NOx) by Discrete Analyser - APHA 20th ed., 4500 NO3- I. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK061 : Total Kjeldahl Nitrogen as N - APHA 20th ed., 4500-Norg-D 100mL water samples are digested using a traditional Kjeldahl digestion followed by determination by FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK067 : Total Phosphorus as P - APHA 20th ed., 4500 P-H This procedure involves sulphuric acid digestion of a 100mL sample to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP071 : TPH - Semivolatile Fraction - 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 (1999) Schedule B(3) (Appdx. 2)

EP075(SIM) : PAH/Phenols (GC/MS - SIM) - 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 (1999) Schedule B(3) (Appdx. 2)

Matrix Type: WATER

Method Reference Summary

Analytical Methods

EP080 : TPH Volatiles/BTEX - 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. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MS ANNE NORTHWAY**
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066
Project	:	**E12723/4**
Order number	:	**- Not provided -**
C-O-C Number	:	**31192**
Site	:	**- Not provided -**
Sampler	:	**G.HARRIS**
E-mail	:	anne_northway@coffey.com.au
Telephone	:	(02)9911-1000
Facsimile	:	(02)9911-1001

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502202**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	23 Mar 2005
SRA Issue Date	:	23 Mar 2005
Scheduled Reporting Date	:	**4 Apr 2005**

Delivery Details

Mode of Delivery	:	Carrier.	Temperature		: ----
No. of eskies/boxes	:	1 HARD	No. of samples	- Received	1
Security Seal	:	Intact.		- Analysed	1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502202
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EK055G Ammonia as By Discrete Analyser	**EK057G** Nitrite as N by Discrete Analyser	**EK058G** Nitrate as N by Discrete Analyser	**EK061** Total Kjeldahl Nitrogen as N (TKN)	**EK067** Total Phosphorus as P	**W-02** 8 Metals	**W-07** TPH/BTEX/PAH			
ES0502202-001	**DUP 1 - 22 Mar 2005**	●	●	●	●	●	●	●			
	Total(s) :	1	1	1	1	1	1	1			

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502202
Project	: E12723/4	**ALS Quote Reference**	: ---

ALS Environmental

Requested Reports

- **MS ANNE NORTHWAY**
  - Certificate of Analysis (PDF) — Email — anne_northway@coffey.com.au
  - Interpretive Quality Control Report - NEPM — Email — anne_northway@coffey.com.au
  - Quality Control Report - NEPM — Email — anne_northway@coffey.com.au
  - ENMRG Export Format — Email — anne_northway@coffey.com.au
  - Chain of Custody Acknowledgement — Email — anne_northway@coffey.com.au
  - Sample Receipt Advice - Comprehensive — Email — anne_northway@coffey.com.au
  - Invoice — Print

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

No. 31192

Chain of Custody

Laboratory Quotation / Order No.

Job No. E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) ALS, 277 Woodpark Rd Smithfield 8784 8555	Sampled by Celena Harris 0429 121 594	Consigning Office: Sydney, Lane Cove & Penrith West
Attention: Greg Vogel.	Project Manager (report results to) Anne Galloway	Courier Service: Consignment Note No.

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Kerry Stefanovic ALS Sydney	23-3-05	8.15 am.

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals	TKN	Total P	Nitrate	Sample Condition on Receipt
	water	Glass/Plastic Vials + Ice.	Dup 1	22/4/05	X	X	X	X	X	X	X	

ALS Environmental
Sydney
Work Order
ES0502202

Report Version: WOLabel 1.00

Telephone : 61-2-87848555

Special Laboratory Instructions: Analysis - PAH, TPH, BTEX, Metals 8, TKN, Total P & Nitrate & Nitrite as total N, Ammonia

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 4**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502247**
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 5 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 2
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This final report for the ALSE work order reference ES0502247 supersedes any previous reports with this reference.
Results apply to the samples as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Nanthini Coilparampil	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	DUPB10	DUPB12			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	16 Mar 2005 15:00	16 Mar 2005 15:00			
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0502247-001	ES0502247-002			
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		6.1	11.6			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5			
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5			
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5			
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5			
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5			
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5			
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5			
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5			
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5			
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5			
Indeno(1,2,3,cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5			
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5			
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5			
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction		2	mg/kg		<2	<2			
C10 - C14 Fraction		50	mg/kg		<50	<50			
C15 - C28 Fraction		100	mg/kg		<100	<100			
C29 - C36 Fraction		100	mg/kg		<100	<100			
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2			
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2			
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2			
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2			
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2			
EP075(SIM)S: Phenolic Compound Surrogates									
2-Fluorophenol	367-12-4	0.1	%		105	81.6			
Phenol-d6	13127-88-3	0.1	%		89.6	85.8			

ALS Environmental

Analytical Results

	Client Sample ID :	DUPB10	DUPB12			
	Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
	Sample Date / Time :	16 Mar 2005 15:00	16 Mar 2005 15:00			
	Laboratory Sample ID :	ES0502247-001	ES0502247-002			
Analyte	*CAS number*	*LOR*	*Units*			
EP075(SIM)S: Phenolic Compound Surrogates						
2-Chlorophenol-D4	93951-73-6	0.1	%	95.0	84.7	
2,4,6-Tribromophenol	118-79-6	0.1	%	79.0	105	
EP075(SIM)T: PAH Surrogates						
2-Fluorobiphenyl	321-60-8	0.1	%	95.5	94.3	
Anthracene-d10	1719-06-8	0.1	%	104	86.8	
4-Terphenyl-d14	1718-51-0	0.1	%	100	89.4	
EP080S: TPH(V)/BTEX Surrogates						
1,2-Dichloroethane-D4	17060-07-0	0.1	%	100	99.4	
Toluene-D8	2037-26-5	0.1	%	108	101	
4-Bromofluorobenzene	460-00-4	0.1	%	99.2	111	

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL

Surrogate Control Limits

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	25	121
	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 7**
Contact	:	MR STRIDER DUERINCK	**Contact**	: Greg Vogel			
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502247**
					Amendment No.	:	
Project	:	E12723/4	**Quote number**	: ----	**Date received**	:	23 Mar 2005
Order number	:	- Not provided -			**Date issued**	:	5 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	- Not provided -	**Telephone**	: 61-2-87848555	**Received**	:	2
Facsimile	:	- Not provided -	**Facsimile**	: 61-2-87848500	**Analysed**	:	2

This final report for the ALSE work order reference ES0502247 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Nanthini Coilparampil	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 55434)				%	%	%
ES0502218-004	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	19.2	19.3	0.5
ES0502248-003	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	10.6	10.1	4.8

ALS Environmental

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 56100)				mg/kg	mg/kg	%
ES0502218-003	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0502218-019	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55485)				mg/kg	mg/kg	%
ES0502218-013	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
ES0502218-017	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56102)				mg/kg	mg/kg	%
ES0502218-019	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 55485)				mg/kg	mg/kg	%
ES0502218-013	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
ES0502218-017	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: SOIL

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 56100)		mg/kg	mg/kg	%	%	%
Naphthalene	0.5 mg/kg	----	4	98.5	87	103
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthylene	0.5 mg/kg	----	4	98.0	85	107
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthene	0.5 mg/kg	----	4	100	87	105
	0.5 mg/kg	<0.5	----	----	----	----
Fluorene	0.5 mg/kg	----	4	97.0	85	105
	0.5 mg/kg	<0.5	----	----	----	----
Phenanthrene	0.5 mg/kg	----	4	93.1	85	113
	0.5 mg/kg	<0.5	----	----	----	----
Anthracene	0.5 mg/kg	----	4	92.2	88	107
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	----	4	99.6	87	105
	0.5 mg/kg	<0.5	----	----	----	----
Pyrene	0.5 mg/kg	----	4	91.8	75	105
	0.5 mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	0.5 mg/kg	----	4	90.3	85	100
	0.5 mg/kg	<0.5	----	----	----	----
Chrysene	0.5 mg/kg	----	4	100	84	111
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	0.5 mg/kg	----	4	99.4	68	112
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	0.5 mg/kg	----	4	93.6	70	129
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	0.5 mg/kg	----	4	95.5	83	108
	0.5 mg/kg	<0.5	----	----	----	----
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	----	4	94.5	76	110
	0.5 mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	94.2	77	107
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	----	4	94.6	76	109
	0.5 mg/kg	<0.5	----	----	----	----

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55485)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	26	99.1	80	119
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56102)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	103	79	112
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	95.4	84	108
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	89.7	76	117
EP080: BTEX						
EP080: BTEX - (QC Lot: 55485)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	92.7	80	118
Toluene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	93.4	81	119
Ethylbenzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	94.1	80	120
meta- & para-Xylene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	94.5	79	119
ortho-Xylene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	97.3	80	119

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 56100)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0502218-003	Anonymous	0.5 mg/kg	10	<0.5	101	70	130
Pyrene			0.5 mg/kg	10	<0.5	91.7	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55485)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0502218-013	Anonymous	2 mg/kg	26	<2	86.3	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56102)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0502218-018	Anonymous	50 mg/kg	700	<50	82.4	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	82.9	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	112	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 55485)				mg/kg	mg/kg	%	%	%
Benzene	ES0502218-013	Anonymous	0.2 mg/kg	2.5	<0.2	86.4	70	130
Toluene			0.2 mg/kg	2.5	<0.2	90.9	70	130
Ethylbenzene			0.2 mg/kg	2.5	<0.2	92.2	70	130
meta- & para-Xylene			0.2 mg/kg	2.5	<0.2	96.0	70	130
ortho-Xylene			0.2 mg/kg	2.5	<0.2	91.3	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MR STRIDER DUERINCK	**Contact**	:	Greg Vogel		
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502247**
						Amendment No.	:
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 5 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	strider_duerinckx@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	- Not provided -	**Telephone**	:	61-2-87848555	**Received**	: 2
Facsimile	:	- Not provided -	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This Interpretive Quality Control Report was issued on 5 Apr 2005 for the ALS work order reference ES0502247 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)		Date Sampled	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
DUPB10,	DUPB12	**16 Mar 2005**	----	----	----	**29 Mar 2005**	23 Mar 2005	**Fail by 5 days**
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved								
DUPB10,	DUPB12	**16 Mar 2005**	**30 Mar 2005**	30 Mar 2005	Pass	**31 Mar 2005**	9 May 2005	Pass
EP075(SIM): PAH/Phenols (SIM)								
Soil Glass Jar - Unpreserved								
DUPB10,	DUPB12	**16 Mar 2005**	**30 Mar 2005**	30 Mar 2005	Pass	**31 Mar 2005**	9 May 2005	Pass
EP080: TPH Volatiles/BTEX								
Soil Glass Jar - Unpreserved								
DUPB10,	DUPB12	**16 Mar 2005**	**29 Mar 2005**	30 Mar 2005	Pass	**30 Mar 2005**	30 Mar 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	6	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	14	14.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EP071: TPH - Semivolatile Fraction	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	14	7.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Matrix Type: SOIL

Summary of Outliers - Analysis Holding times and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
DUPB10, DUPB12	**16 Mar 2005**	----	----	----	**29 Mar 2005**	23 Mar 2005	**Fail by 5 days**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - 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.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MR STRIDER DUERINCK**
Address	:	42 HILLS STREET GOSFORD NSW AUSTRALIA 2250
Project	:	**E12723/4**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	strider_duerinckx@coffey.com.au
Telephone	:	- Not provided -
Facsimile	:	- Not provided -

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502247**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	23 Mar 2005
SRA Issue Date	:	24 Mar 2005
Scheduled Reporting Date	:	**5 Apr 2005**

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		: ----
No. of eskies/boxes	:	1 FOAM	**No. of samples**	**- Received**	2
Security Seal	:	Intact.		**- Analysed**	2

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502247
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		S-07 TPH/BTEX/PAH (SIM)									
ES0502247-001	**DUPB10 - 16 Mar 2005**	●									
ES0502247-002	**DUPB12 - 16 Mar 2005**	●									
	Total(s) :	**2**									

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502247
Project	: E12723/4	**ALS Quote Reference**	: ----

Requested Reports

- **MR STRIDER DUERINCK**

-	Certificate of Analysis (PDF)	Email	strider_duerinckx@coffey.com.au
-	Interpretive Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
-	Quality Control Report - NEPM	Email	strider_duerinckx@coffey.com.au
-	ENMRG Export Format	Email	strider_duerinckx@coffey.com.au
-	Chain of Custody Acknowledgement	Email	strider_duerinckx@coffey.com.au
-	Sample Receipt Advice - Comprehensive	Email	strider_duerinckx@coffey.com.au
-	Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

Coffey. Project NO: E12723/4

Area	Sample ID	Date Collected	Comments		
				TPH/BTEX/PAH	BTEX
Area B	DUPB10 (1)	16/3/05		1	
	DUPB12 (2)	17/3/05		1	
			No. of Analyses	2	0

* As, Cd, Cr, Cu, Pb, Hg, Ni and Zn

ALS Environmental
Sydney
Work Order
ES0502247

Report Version: WOLabel 1.00

Telephone : 61-2-87848555

Received by ALS
Sarg Stephens
5-15pm.
23.3.5

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 4**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502250**
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 31 Mar 2005
C-O-C number	:	31194					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This final report for the ALSE work order reference ES0502250 supersedes any previous reports with this reference.
Results apply to the sample as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	**DUP2**			
				Sample Matrix Type / Description :	WATER / WATER			
				Sample Date / Time :	23 Mar 2005 15:00			
				Laboratory Sample ID :	**ES0502250-001**			
Analyte	***CAS number***	***LOR***	***Units***					
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	1.4				
Phenanthrene	85-01-8	1.0	µg/L	7.8				
Anthracene	120-12-7	1.0	µg/L	1.8				
Fluoranthene	206-44-0	1.0	µg/L	4.0				
Pyrene	129-00-0	1.0	µg/L	3.2				
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	0.7				
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				
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	200				
C29 - C36 Fraction		50	µg/L	100				
EP080: BTEX								
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				
EP075(SIM)S: Phenolic Compound Surrogates								
2-Fluorophenol	367-12-4	0.1	%	32.3				
Phenol-d6	13127-88-3	0.1	%	28.4				
2-Chlorophenol-D4	93951-73-6	0.1	%	77.9				
2,4,6-Tribromophenol	118-79-6	0.1	%	103				

ALS Environmental

Analytical Results

			Client Sample ID :	DUP2				
			Sample Matrix Type / Description :	WATER / WATER				
			Sample Date / Time :	23 Mar 2005 15:00				
			Laboratory Sample ID :	ES0502250-001				
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	76.5				
Anthracene-d10	1719-06-8	0.1	%	67.6				
4-Terphenyl-d14	1718-51-0	0.1	%	70.0				
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	97.9				
Toluene-D8	2037-26-5	0.1	%	109				
4-Bromofluorobenzene	460-00-4	0.1	%	96.2				

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: WATER ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	21	100
	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 6**
Contact	:	MS ANNE NORTHWAY	**Contact**	: Greg Vogel			
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502250**
					Amendment No.	:	
Project	:	E12723/4	**Quote number**	: ----	**Date received**	:	23 Mar 2005
Order number	:	- Not provided -			**Date issued**	:	31 Mar 2005
C-O-C number	:	31194					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	(02)9911-1000	**Telephone**	: 61-2-87848555	**Received**	:	1
Facsimile	:	(02)9911-1001	**Facsimile**	: 61-2-87848500	**Analysed**	:	1

This final report for the ALSE work order reference ES0502250 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

The Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced except in full.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

ALS Environmental

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 55119)				µg/L	µg/L	%
ES0502250-001	DUP2	Naphthalene	0.5 µg/L	<1.0	1.0	0.0
		Acenaphthylene	0.5 µg/L	<1.0	<0.5	66.7
		Acenaphthene	0.5 µg/L	<1.0	6.0	142
		Fluorene	0.5 µg/L	1.4	1.6	11.8
		Phenanthrene	0.5 µg/L	7.8	<0.5	176
		Anthracene	0.5 µg/L	1.8	<0.5	114
		Fluoranthene	0.5 µg/L	4.0	<0.5	155
		Pyrene	0.5 µg/L	3.2	<0.5	145
		Benz(a)anthracene	0.5 µg/L	<1.0	<0.5	66.7
		Chrysene	0.5 µg/L	<1.0	<0.5	66.7
		Benzo(b)fluoranthene	0.5 µg/L	<1.0	<0.5	66.7
		Benzo(k)fluoranthene	0.5 µg/L	<1.0	<0.5	66.7
		Benzo(a)pyrene	0.5 µg/L	0.7	<0.5	38.6
		Indeno(1,2,3,cd)pyrene	0.5 µg/L	<1.0	<0.5	66.7
		Dibenz(a,h)anthracene	0.5 µg/L	<1.0	<0.5	66.7
		Benzo(g,h,i)perylene	0.5 µg/L	<1.0	<0.5	66.7
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55121)				µg/L	µg/L	%
ES0502250-001	DUP2	C10 - C14 Fraction	50 µg/L	<50	160	105
		C15 - C28 Fraction	100 µg/L	200	400	43.7
		C29 - C36 Fraction	50 µg/L	100	<50	63.6
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55539)				µg/L	µg/L	%
ES0502220-001	Anonymous	C6 - C9 Fraction	20 µg/L	<20	<20	0.0
ES0502222-004	Anonymous	C6 - C9 Fraction	20 µg/L	<20	<20	0.0

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080: BTEX						
EP080: BTEX - (QC Lot: 55539)				µg/L	µg/L	%
ES0502220-001	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0
ES0502222-004	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: WATER

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 55119)		µg/L	µg/L	%	%	%
Naphthalene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	100	72	111
Acenaphthylene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	95.8	77	110
Acenaphthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	93.7	74	111
Fluorene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	94.4	73	110
Phenanthrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	90.8	75	112
Anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	89.9	77	107
Fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	96.3	70	113
Pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	107	65	109
Benz(a)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	94.7	78	107
Chrysene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	88.1	76	109
Benzo(b)fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	87.9	55	118
Benzo(k)fluoranthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	98.6	67	114
Benzo(a)pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	90.9	73	112
Indeno(1,2,3,cd)pyrene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	88.4	68	109
Dibenz(a,h)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	92.5	66	109
Benzo(g,h,i)perylene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	82.9	66	107

ALS Environmental

Matrix Type: WATER

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55121)		µg/L	µg/L	%	%	%
C10 - C14 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	116	75	134
C15 - C28 Fraction	100 µg/L	<100	----	----	----	----
	100 µg/L	----	200	126	87	132
C29 - C36 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	122	80	126
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55539)		µg/L	µg/L	%	%	%
C6 - C9 Fraction	20 µg/L	<20	----	----	----	----
	20 µg/L	----	260	97.7	80	120
EP080: BTEX						
EP080: BTEX - (QC Lot: 55539)		µg/L	µg/L	%	%	%
Benzene	1 µg/L	<1	----	----	----	----
	1 µg/L	----	10	99.3	78	125
Toluene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	104	74	126
Ethylbenzene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	101	73	118
meta- & para-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	102	78	117
ortho-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	102	75	119

ALS Environmental

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 55119)				µg/L	µg/L	%	%	%
Acenaphthene	ES0502250-001	DUP2	0.5 µg/L	20	<1.0	88.9	70	130
Pyrene			0.5 µg/L	20	3.2	69.2	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55121)				µg/L	µg/L	%	%	%
C10 - C14 Fraction	ES0502250-001	DUP2	50 µg/L	200	<50	89.5	70	130
C15 - C28 Fraction			100 µg/L	200	200	118	70	130
C29 - C36 Fraction			50 µg/L	200	100	121	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 55539)				µg/L	µg/L	%	%	%
C6 - C9 Fraction	ES0502220-002	Anonymous	20 µg/L	250	120	100	80	120
EP080: BTEX								
EP080: BTEX - (QC Lot: 55539)				µg/L	µg/L	%	%	%
Benzene	ES0502220-002	Anonymous	1 µg/L	25	8	101	80	120
Toluene			2 µg/L	25	<2	93.5	80	120
Ethylbenzene			2 µg/L	25	14	89.2	80	120
meta- & para-Xylene			2 µg/L	25	36	82.0	80	120
ortho-Xylene			2 µg/L	25	12	94.5	80	120

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502250**
						Amendment No.	:
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 23 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 31 Mar 2005
C-O-C number	:	31194					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This Interpretive Quality Control Report was issued on 31 Mar 2005 for the ALS work order reference ES0502250 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. *Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time* from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: WATER

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP071: TPH - Semivolatile Fraction							
Amber Glass Bottle - Unpreserved							
DUP2	**23 Mar 2005**	**24 Mar 2005**	30 Mar 2005	Pass	**29 Mar 2005**	3 May 2005	Pass
EP075(SIM): PAH/Phenols (GC/MS - SIM)							
Amber Glass Bottle - Unpreserved							
DUP2	**23 Mar 2005**	**24 Mar 2005**	30 Mar 2005	Pass	**29 Mar 2005**	3 May 2005	Pass
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl							
DUP2	**23 Mar 2005**	----	----	----	**29 Mar 2005**	6 Apr 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: WATER

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EP071: TPH - Semivolatile Fraction	1	4	25.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	6	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EP071: TPH - Semivolatile Fraction	1	4	25.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EP071: TPH - Semivolatile Fraction	1	4	25.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EP071: TPH - Semivolatile Fraction	1	4	25.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	6	16.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

Matrix Type: WATER

Summary of Outliers - Quality Control Samples

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Duplicates (DUP)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	WATER	ES0502250-001	DUP2	Acenaphthene	142 %	0-50 %	RPD exceeds LOR based limits
				Phenanthrene	176 %	0-50 %	RPD exceeds LOR based limits
Matrix Spikes (MS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	WATER	ES0502250-001	DUP2	Pyrene	69.2 %	70-130 %	Recovery less than lower data quality objective

- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: WATER ***Method Reference Summary***

Preparation Methods

ORG14 : Separatory Funnel Extraction of Liquids - USEPA SW 846 - 3510B 500 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 (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Analytical Methods

EP071 : TPH - Semivolatile Fraction - 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 (1999) Schedule B(3) (Appdx. 2)

EP075(SIM) : PAH/Phenols (GC/MS - SIM) - 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 (1999) Schedule B(3) (Appdx. 2)

EP080 : TPH Volatiles/BTEX - 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. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MS ANNE NORTHWAY**
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066
Project	:	**E12723/4**
Order number	:	**- Not provided -**
C-O-C Number	:	**31194**
Site	:	**- Not provided -**
Sampler	:	**GLEN HARRIS**
E-mail	:	anne_northway@coffey.com.au
Telephone	:	(02)9911-1000
Facsimile	:	(02)9911-1001

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502250**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	23 Mar 2005
SRA Issue Date	:	24 Mar 2005
Scheduled Reporting Date	:	**5 Apr 2005**

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		: ----
No. of eskies/boxes	:	1 HARD	**No. of samples**	**- Received**	1
Security Seal	:	Intact.		**- Analysed**	1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502250
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		W-07 TPH/BTEX/PAH									
ES0502250-001	**DUP2 - 23 Mar 2005**	●									
	Total(s) :	1									

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502250
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Requested Reports

- **MS ANNE NORTHWAY**

-	Certificate of Analysis (PDF)	Email	anne_northway@coffey.com.au
-	Interpretive Quality Control Report - NEPM	Email	anne_northway@coffey.com.au
-	Quality Control Report - NEPM	Email	anne_northway@coffey.com.au
-	ENMRG Export Format	Email	anne_northway@coffey.com.au
-	Chain of Custody Acknowledgement	Email	anne_northway@coffey.com.au
-	Sample Receipt Advice - Comprehensive	Email	anne_northway@coffey.com.au
-	Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

Area B

No: 31194

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Dispatch to: (Address & Phone No:) ALS Smithfield

Sampled by: Glenn Harris 0429 121 594

Consigning Office: Sydney & Lane Cove West

Date Dispatched: 13/3/05

Attention: Greg Vogel.

Project Manager: (report results to) Anne Northway

Courier Service:

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Sonja Stephens ALS	23/3/05	5:50 pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: Pahs	Tpahs	Vocs (BTEX)	Metals (x)																		Standard TAT (5 days)	Urgent TAT (specify)
	Water	2 Amber Glass 1 Plastic	Dup	22/3/05	X	X	X																				
			MS		For Matrix Spikes.																						

ALS Environmental
Sydney
Work Order
ES0502250
Report Version: WOLabel 1.00
Telephone : 61-2-87848555

Special Laboratory Instructions:

Detection Limits:

Turnaround Requirements:

Copies: WHITE: Sign on release. YELLOW: Included for ALS to keep. PINK: Retained by Consignor. BLUE: Sign on receipt and fax back to Coffey.

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 6**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502313**
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 29 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 6 Apr 2005
C-O-C number	:	30613-30614+31191					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 3
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This final report for the ALSE work order reference ES0502313 supersedes any previous reports with this reference.
Results apply to the samples as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

ALS Environmental

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	DUP D14	DUP D18			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	22 Mar 2005 0:00	24 Mar 2005 0:00			
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0502313-001	ES0502313-002			
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		11.2	13.9			
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5			
Cadmium	7440-43-9	1	mg/kg		<1	<1			
Chromium	7440-47-3	2	mg/kg		5	7			
Copper	7440-50-8	5	mg/kg		28	15			
Lead	7439-92-1	5	mg/kg		79	114			
Nickel	7440-02-0	2	mg/kg		6	6			
Zinc	7440-66-6	5	mg/kg		148	228			
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.4	<0.1			
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.5	mg/kg		----	<0.5			
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			
Styrene	100-42-5	0.5	mg/kg		----	<0.5			
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5			
Isopropylbenzene	98-82-8	0.5	mg/kg		----	<0.5			
n-Propylbenzene	103-65-1	0.5	mg/kg		----	<0.5			
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		----	<0.5			
sec-Butylbenzene	135-98-8	0.5	mg/kg		----	<0.5			
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		----	<0.5			
tert-Butylbenzene	98-06-6	0.5	mg/kg		----	<0.5			
p-Isopropyltoluene	99-87-6	0.5	mg/kg		----	<0.5			
n-Butylbenzene	104-51-8	0.5	mg/kg		----	<0.5			
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	5	mg/kg		----	<5			
Vinyl Acetate	108-05-4	5	mg/kg		----	<5			
2-Butanone (MEK)	78-93-3	5	mg/kg		----	<5			
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	<5			
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	<5			

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: DUP D14 Sample Matrix Type / Description: SOIL / SOIL Sample Date / Time: 22 Mar 2005 0:00 Laboratory Sample ID: ES0502313-001	Client Sample ID: DUP D18 Sample Matrix Type / Description: SOIL / SOIL Sample Date / Time: 24 Mar 2005 0:00 Laboratory Sample ID: ES0502313-002			
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	----	<0.5			
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	<0.5			
1,2-Dichloropropane	78-87-5	0.5	mg/kg	----	<0.5			
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	<0.5			
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	<0.5			
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	<0.5			
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	<5			
Chloromethane	74-87-3	5	mg/kg	----	<5			
Vinyl chloride	75-01-4	5	mg/kg	----	<5			
Bromomethane	74-83-9	5	mg/kg	----	<5			
Chloroethane	75-00-3	5	mg/kg	----	<5			
Trichlorofluoromethane	75-69-4	5	mg/kg	----	<5			
1,1-Dichloroethene	75-35-4	0.5	mg/kg	----	<0.5			
Iodomethane	74-88-4	0.5	mg/kg	----	<0.5			
Methylene chloride	75-09-2	0.5	mg/kg	----	<0.5			
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	----	<0.5			
1,1-Dichloroethane	75-34-3	0.5	mg/kg	----	<0.5			
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	----	<0.5			
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	----	<0.5			
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	----	<0.5			
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	<0.5			
1,2-Dichloroethane	107-06-2	0.5	mg/kg	----	<0.5			
Trichloroethene	79-01-6	0.5	mg/kg	----	<0.5			
Dibromomethane	74-95-3	0.5	mg/kg	----	<0.5			
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	----	<0.5			
1,3-Dichloropropane	142-28-9	0.5	mg/kg	----	<0.5			
Tetrachloroethene	127-18-4	0.5	mg/kg	----	<0.5			
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	<0.5			
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	<0.5			
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	<0.5			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	<0.5			
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	----	<0.5			
Pentachloroethane	76-01-7	0.5	mg/kg	----	<0.5			
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	<0.5			

ALS Environmental

Analytical Results

				Client Sample ID :	DUP D14	DUP D18			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	22 Mar 2005 0:00	24 Mar 2005 0:00			
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0502313-001	ES0502313-002			
EP074E: Halogenated Aliphatic Compounds									
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	<0.5			
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	<0.5			
Bromobenzene	108-86-1	0.5	mg/kg		----	<0.5			
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	<0.5			
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	<0.5			
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	<0.5			
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	<0.5			
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	<0.5			
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	<0.5			
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	<0.5			
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	<0.5			
Bromodichloromethane	75-27-4	0.5	mg/kg		----	<0.5			
Dibromochloromethane	124-48-1	0.5	mg/kg		----	<0.5			
Bromoform	75-25-2	0.5	mg/kg		----	<0.5			
EP074H: Naphthalene									
Naphthalene	91-20-3	5	mg/kg		----	<5			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	0.5			
Acenaphthylene	208-96-8	0.5	mg/kg		0.5	3.0			
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5			
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5			
Phenanthrene	85-01-8	0.5	mg/kg		0.8	4.8			
Anthracene	120-12-7	0.5	mg/kg		0.5	2.7			
Fluoranthene	206-44-0	0.5	mg/kg		1.8	23.1			
Pyrene	129-00-0	0.5	mg/kg		2.2	24.9			
Benz(a)anthracene	56-55-3	0.5	mg/kg		1.1	11.4			
Chrysene	218-01-9	0.5	mg/kg		1.2	10.0			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		1.6	10.7			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		0.6	6.9			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		1.2	10.7			
Indeno(1,2,3,cd)pyrene	193-39-5	0.5	mg/kg		0.6	5.7			
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	1.4			
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		0.9	7.3			

ALS Environmental

Analytical Results

				Client Sample ID :	DUP D14	DUP D18			
				Sample Matrix Type / Description :	SOIL / SOIL	SOIL / SOIL			
				Sample Date / Time :	22 Mar 2005 0:00	24 Mar 2005 0:00			
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0502313-001	ES0502313-002			
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction		2	mg/kg		<2	<2			
C10 - C14 Fraction		50	mg/kg		<50	<50			
C15 - C28 Fraction		100	mg/kg		<100	280			
C29 - C36 Fraction		100	mg/kg		<100	290			
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	----			
Toluene	108-88-3	0.2	mg/kg		<0.2	----			
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----			
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----			
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----			
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		----	109			
Toluene-D8	2037-26-5	0.1	%		----	107			
4-Bromofluorobenzene	460-00-4	0.1	%		----	104			
EP075(SIM)S: Phenolic Compound Surrogates									
2-Fluorophenol	367-12-4	0.1	%		98.0	90.3			
Phenol-d6	13127-88-3	0.1	%		103	102			
2-Chlorophenol-D4	93951-73-6	0.1	%		84.5	83.8			
2,4,6-Tribromophenol	118-79-6	0.1	%		92.0	103			
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		99.0	98.5			
Anthracene-d10	1719-06-8	0.1	%		102	104			
4-Terphenyl-d14	1718-51-0	0.1	%		105	93.6			
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		99.4	109			
Toluene-D8	2037-26-5	0.1	%		109	107			
4-Bromofluorobenzene	460-00-4	0.1	%		102	104			

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL

Surrogate Control Limits

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP074: Volatile Organic Compounds			
EP074S: VOC Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	2-Fluorophenol	25	121
	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET5635/ 8188 / 1 - 1
Your ref: ES0502313
NATA Accreditation No: 14484

4 April 2005

Australian Laboratory Services Pty Ltd
277 Woodpark Road
Smithfield,
NSW 2164.

Fax No: 02-87848500
Attn: Mr Greg Vogel

Dear Greg,

This report presents the results of one sample, forwarded by Australian Laboratory Services Pty Ltd, on 1 April 2005, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods: The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy inconjunction with dispersion Staining method **(Safer Environment Method 1.)**

3. Results: **Sample No. 1. ASET5635 / 8188 / 1. ES0502313 #2 / DUP D18.**
Approx dimensions 5.5 cm x 1.0 cm x 4.5 cm
The sample consisted of mixture of sandy soil, stones, plant matter and fragments of plaster.
No asbestos detected.

NATA Accredited Laboratory
Number: 14484

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Analysed and reported by,

Michaela Foley B EnvSc
***Environmental Scientist* / Approved Analyst**

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

UNIT 7 LEVEL 2, 1 LEONARD STREET, HORNSBY NSW 2077 - P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635
PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: aset@bigpond.net.au WEBSITE: www.aset.com.au

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

Attn: Mahen De Silva
TAT:
___ 24 hrs calendar days
___ 5 calendar days
___ Other: _____
Date Due: 5.3.5
Purchase Order: 226738
ALS Batch No.: ES0502313

CHAIN OF CUSTODY

FROM: Australian Laboratory Services Pty. Ltd.
277 WOODPARK ROAD
SMITHFIELD NSW 2164.
TEL: (02)8784-8555
FAX: (02) 8784-8500

TO: Aust. Safer and Env. Technology
Suite 1, Lvl 2
1 Leonard Street
Hornsby, NSW, 2077
TEL: (02) 9987 2183
FAX: (02) 9987 2151

LABORATORY PARAMETERS

ALS

	SAMPLE IDENTIFICATION	CONTAINER DATA #																COMMENTS
	ES0502313				Asbestos													
	SAMPLE ID. # (2)	DATE	TYPE	NO.														
2	Dup D18	24.3.5	S	1	✓													

NOTES: 1. Please ensure that a signed copy is faxed back immediatly to ALS Sydney acknowledging receipt.
2. Contact Michael Heery if the requested TAT cannot be met.

RELINQUISHED BY (SIGN / PRINT): Sanj Sharma	DATE: 30.3.5	RECEIVED BY (SIGN / PRINT): M. M. De Silva	DATE: 5/4/5
OF: ALS.	TIME: 9.00 am	OF: ALS P/L	(ARRIVAL TEMP: deg. C) TIME:
RELINQUISHED BY (SIGN / PRINT):	DATE:	RECEIVED BY (SIGN / PRINT):	DATE:
OF:	TIME:	OF:	(ARRIVAL TEMP: deg. C) TIME:

AUSTRALIAN LABORATORY SERVICES P/L

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 18**
Contact	:	MS ANNE NORTHWAY	**Contact**	: Greg Vogel			
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502313**
					Amendment No.	:	
Project	:	E12723/4	**Quote number**	: ----	**Date received**	:	29 Mar 2005
Order number	:	- Not provided -			**Date issued**	:	6 Apr 2005
C-O-C number	:	30613-30614+31191					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	(02)9911-1000	**Telephone**	: 61-2-87848555	**Received**	:	3
Facsimile	:	(02)9911-1001	**Facsimile**	: 61-2-87848500	**Analysed**	:	2

This final report for the ALSE work order reference ES0502313 supersedes any previous reports with this reference.
Results apply to the samples as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- *Laboratory Duplicates* (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)
Rassem Ayoubi	Organics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 57118)				%	%	%
ES0502313-001	DUP D14	Moisture Content (dried @ 103°C)	1.0 %	11.2	12.2	8.2
ES0502330-002	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	80.8	80.6	0.2
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 57236)				mg/kg	mg/kg	%
ES0502305-018	Anonymous	Arsenic	5 mg/kg	7	7	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	20	21	0.0
		Copper	5 mg/kg	14	13	0.0
		Lead	5 mg/kg	18	12	42.2
		Nickel	2 mg/kg	15	14	0.0
		Zinc	5 mg/kg	24	23	0.0
ES0502346-004	Anonymous	Arsenic	5 mg/kg	5	<5	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	8	10	30.0
		Copper	5 mg/kg	27	30	10.8
		Lead	5 mg/kg	25	11	76.0
		Nickel	2 mg/kg	4	4	0.0
		Zinc	5 mg/kg	40	36	9.1
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 57234)				mg/kg	mg/kg	%
ES0502302-001	Anonymous	Mercury	0.1 mg/kg	<0.1	<0.1	0.0
ES0502305-008	Anonymous	Mercury	0.1 mg/kg	<0.1	<0.1	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074A: Monocyclic Aromatic Hydrocarbons						
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Benzene	0.5 mg/kg	<0.5	<0.5	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		Styrene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		Isopropylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		n-Propylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,3,5-Trimethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		sec-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,4-Trimethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		tert-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		p-Isopropyltoluene	0.5 mg/kg	<0.5	<0.5	0.0
		n-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	Benzene	0.5 mg/kg	<0.5	<0.5	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		Styrene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		Isopropylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		n-Propylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,3,5-Trimethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		sec-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,4-Trimethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		tert-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		p-Isopropyltoluene	0.5 mg/kg	<0.5	<0.5	0.0
		n-Butylbenzene	0.5 mg/kg	<0.5	<0.5	0.0

ALS Environmental

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074B: Oxygenated Compounds						
EP074B: Oxygenated Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	2-Propanone (Acetone)	5 mg/kg	<5	<5	0.0
		Vinyl Acetate	5 mg/kg	<5	<5	0.0
		2-Butanone (MEK)	5 mg/kg	<5	<5	0.0
		4-Methyl-2-pentanone (MIBK)	5 mg/kg	<5	<5	0.0
		2-Hexanone (MBK)	5 mg/kg	<5	<5	0.0
ES0502345-017	Anonymous	2-Propanone (Acetone)	5 mg/kg	<5	<5	0.0
		Vinyl Acetate	5 mg/kg	<5	<5	0.0
		2-Butanone (MEK)	5 mg/kg	<5	<5	0.0
		4-Methyl-2-pentanone (MIBK)	5 mg/kg	<5	<5	0.0
		2-Hexanone (MBK)	5 mg/kg	<5	<5	0.0
EP074C: Sulfonated Compounds						
EP074C: Sulfonated Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Carbon disulfide	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	Carbon disulfide	0.5 mg/kg	<0.5	<0.5	0.0
EP074D: Fumigants						
EP074D: Fumigants - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	2,2-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,3-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		trans-1,3-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dibromoethane (EDB)	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	2,2-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,3-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		trans-1,3-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dibromoethane (EDB)	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074E: Halogenated Aliphatic Compounds						
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Dichlorodifluoromethane	5 mg/kg	<5	<5	0.0
		Chloromethane	5 mg/kg	<5	<5	0.0
		Vinyl chloride	5 mg/kg	<5	<5	0.0
		Bromomethane	5 mg/kg	<5	<5	0.0
		Chloroethane	5 mg/kg	<5	<5	0.0
		Trichlorofluoromethane	5 mg/kg	<5	<5	0.0
		1,1-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		Iodomethane	0.5 mg/kg	<0.5	<0.5	0.0
		Methylene chloride	0.5 mg/kg	<0.5	<0.5	0.0
		trans-1,2-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1-Dichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,2-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,1-Trichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,1-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		Carbon Tetrachloride	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		Trichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibromomethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,2-Trichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,3-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Tetrachloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,1,2-Tetrachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		trans-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,2,2-Tetrachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,3-Trichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Pentachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dibromo-3-chloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Hexachlorobutadiene	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	Dichlorodifluoromethane	5 mg/kg	<5	<5	0.0
		Chloromethane	5 mg/kg	<5	<5	0.0
		Vinyl chloride	5 mg/kg	<5	<5	0.0
		Bromomethane	5 mg/kg	<5	<5	0.0
		Chloroethane	5 mg/kg	<5	<5	0.0
		Trichlorofluoromethane	5 mg/kg	<5	<5	0.0
		1,1-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		Iodomethane	0.5 mg/kg	<0.5	<0.5	0.0
		Methylene chloride	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
ES0502345-017	Anonymous	trans-1,2-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1-Dichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,2-Dichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,1-Trichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,1-Dichloropropylene	0.5 mg/kg	<0.5	<0.5	0.0
		Carbon Tetrachloride	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		Trichloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibromomethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,2-Trichloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,3-Dichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Tetrachloroethene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,1,2-Tetrachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		trans-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	<0.5	0.0
		cis-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	<0.5	0.0
		1,1,2,2-Tetrachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,3-Trichloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Pentachloroethane	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dibromo-3-chloropropane	0.5 mg/kg	<0.5	<0.5	0.0
		Hexachlorobutadiene	0.5 mg/kg	<0.5	<0.5	0.0
EP074F: Halogenated Aromatic Compounds						
EP074F: Halogenated Aromatic Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Chlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		Bromobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		2-Chlorotoluene	0.5 mg/kg	<0.5	<0.5	0.0
		4-Chlorotoluene	0.5 mg/kg	<0.5	<0.5	0.0
		1,3-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,4-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,4-Trichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,3-Trichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	Chlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		Bromobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		2-Chlorotoluene	0.5 mg/kg	<0.5	<0.5	0.0
		4-Chlorotoluene	0.5 mg/kg	<0.5	<0.5	0.0
		1,3-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,4-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2-Dichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,4-Trichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0
		1,2,3-Trichlorobenzene	0.5 mg/kg	<0.5	<0.5	0.0

ALS Environmental

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074G: Trihalomethanes						
EP074G: Trihalomethanes - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Chloroform	0.5 mg/kg	<0.5	<0.5	0.0
		Bromodichloromethane	0.5 mg/kg	<0.5	<0.5	0.0
		Dibromochloromethane	0.5 mg/kg	<0.5	<0.5	0.0
		Bromoform	0.5 mg/kg	<0.5	<0.5	0.0
ES0502345-017	Anonymous	Chloroform	0.5 mg/kg	<0.5	<0.5	0.0
		Bromodichloromethane	0.5 mg/kg	<0.5	<0.5	0.0
		Dibromochloromethane	0.5 mg/kg	<0.5	<0.5	0.0
		Bromoform	0.5 mg/kg	<0.5	<0.5	0.0
EP074H: Naphthalene						
EP074H: Naphthalene - (QC Lot: 56774)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Naphthalene	5 mg/kg	<5	<5	0.0
ES0502345-017	Anonymous	Naphthalene	5 mg/kg	<5	<5	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 57051)				mg/kg	mg/kg	%
ES0502265-030	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56715)				mg/kg	mg/kg	%
ES0502305-011	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
ES0502305-014	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56775)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
ES0502345-017	Anonymous	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 57052)				mg/kg	mg/kg	%
ES0502265-028	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0502265-033	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 56715)				mg/kg	mg/kg	%
ES0502305-011	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
ES0502305-014	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
EP080: BTEX - (QC Lot: 56775)				mg/kg	mg/kg	%
ES0502345-004	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
ES0502345-017	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

ALS Environmental

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: SOIL

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 57236)		mg/kg	mg/kg	%	%	%
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	121	70	130
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	99.2	70	130
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	114	70	130
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	104	70	130
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	103	70	130
Nickel	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	54.8	111	70	130
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	107	70	130
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 57234)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	97.5	70	130

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP074A: Monocyclic Aromatic Hydrocarbons						
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Benzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	90.3	79	126
Toluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	108	72	128
Ethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	103	75	127
meta- & para-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	107	76	128
Styrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	103	77	129
ortho-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	104	75	128
Isopropylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	105	73	129
n-Propylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	108	75	125
1,3,5-Trimethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	116	76	126
sec-Butylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	116	75	124
1,2,4-Trimethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	111	76	123
tert-Butylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	114	78	124
p-Isopropyltoluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	112	76	125
n-Butylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	111	72	126

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP074B: Oxygenated Compounds						
EP074B: Oxygenated Compounds - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
2-Propanone (Acetone)	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	89.1	71	127
Vinyl Acetate	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	98.1	71	128
2-Butanone (MEK)	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	99.1	72	129
4-Methyl-2-pentanone (MIBK)	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	82.4	71	128
2-Hexanone (MBK)	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	94.6	72	125
EP074C: Sulfonated Compounds						
EP074C: Sulfonated Compounds - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Carbon disulfide	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	95.5	73	127
EP074D: Fumigants						
EP074D: Fumigants - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
2,2-Dichloropropane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	97.4	74	128
1,2-Dichloropropane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	96.9	73	125
cis-1,3-Dichloropropylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	99.1	73	124
trans-1,3-Dichloropropylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	90.5	76	124
1,2-Dibromoethane (EDB)	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	104	74	125

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP074E: Halogenated Aliphatic Compounds						
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Dichlorodifluoromethane	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	106	74	126
Chloromethane	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	95.4	73	127
Vinyl chloride	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	116	71	124
Bromomethane	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	96.8	71	125
Chloroethane	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	93.9	71	126
Trichlorofluoromethane	5 mg/kg	<5	----	----	----	----
	1 mg/kg	----	10	97.6	72	127
1,1-Dichloroethene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	98.6	73	128
Iodomethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	90.8	74	129
Methylene chloride	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	97.4	72	126
trans-1,2-Dichloroethene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	93.9	72	128
1,1-Dichloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	94.2	72	126
cis-1,2-Dichloroethene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	91.7	73	127
1,1,1-Trichloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	95.8	74	128
1,1-Dichloropropylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	90.8	75	129
Carbon Tetrachloride	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	93.8	76	126
1,2-Dichloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	93.4	76	128
Trichloroethene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	90.0	73	124
Dibromomethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	105	72	126
1,1,2-Trichloroethane	0.5 mg/kg	<0.5	----	----	----	----

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Spike Recovery: LCS	Recovery Limits: Dynamic Recovery Limits: Low	Recovery Limits: Dynamic Recovery Limits: High
EP074E: Halogenated Aliphatic Compounds						
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
1,1,2-Trichloroethane	0.5 mg/kg	----	1	106	73	126
1,3-Dichloropropane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	110	73	126
Tetrachloroethene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	106	76	128
1,1,1,2-Tetrachloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	109	70	126
trans-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	96.9	71	125
cis-1,4-Dichloro-2-butene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	110	71	126
1,1,2,2-Tetrachloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	105	71	125
1,2,3-Trichloropropane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	106	72	126
Pentachloroethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	114	71	126
1,2-Dibromo-3-chloropropane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	94.3	70	128
Hexachlorobutadiene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	112	70	128

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP074F: Halogenated Aromatic Compounds						
EP074F: Halogenated Aromatic Compounds - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Chlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	104	72	126
Bromobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	105	73	126
2-Chlorotoluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	113	71	126
4-Chlorotoluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	117	71	126
1,3-Dichlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	112	72	127
1,4-Dichlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	104	73	126
1,2-Dichlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	112	75	128
1,2,4-Trichlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	114	72	128
1,2,3-Trichlorobenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	116	73	123
EP074G: Trihalomethanes						
EP074G: Trihalomethanes - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Chloroform	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	93.2	72	122
Bromodichloromethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	93.2	72	122
Dibromochloromethane	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	112	73	126
Bromoform	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	114	70	128
EP074H: Naphthalene						
EP074H: Naphthalene - (QC Lot: 56774)		mg/kg	mg/kg	%	%	%
Naphthalene	5 mg/kg	<5	----	----	----	----
	0.5 mg/kg	----	1	111	72	128

ALS Environmental

Matrix Type: SOIL

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

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 57051)		mg/kg	mg/kg	%	%	%
Naphthalene	0.5 mg/kg	----	4	99.9	87	103
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthylene	0.5 mg/kg	----	4	92.1	85	107
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthene	0.5 mg/kg	----	4	95.0	87	105
	0.5 mg/kg	<0.5	----	----	----	----
Fluorene	0.5 mg/kg	----	4	95.8	85	105
	0.5 mg/kg	<0.5	----	----	----	----
Phenanthrene	0.5 mg/kg	----	4	96.3	85	113
	0.5 mg/kg	<0.5	----	----	----	----
Anthracene	0.5 mg/kg	----	4	106	88	107
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	----	4	99.1	87	105
	0.5 mg/kg	<0.5	----	----	----	----
Pyrene	0.5 mg/kg	----	4	90.6	75	105
	0.5 mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	0.5 mg/kg	----	4	91.5	85	100
	0.5 mg/kg	<0.5	----	----	----	----
Chrysene	0.5 mg/kg	----	4	102	84	111
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	0.5 mg/kg	----	4	89.8	68	112
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	0.5 mg/kg	----	4	104	70	129
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	0.5 mg/kg	----	4	95.2	83	108
	0.5 mg/kg	<0.5	----	----	----	----
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	----	4	94.5	76	110
	0.5 mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	99.6	77	107
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	----	4	94.9	76	109
	0.5 mg/kg	<0.5	----	----	----	----

ALS Environmental

Matrix Type: SOIL

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

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56715)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	----	26	93.8	80	119
	2 mg/kg	<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56775)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	26	96.6	80	119
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 57052)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	104	79	112
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	102	84	108
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	110	76	117
EP080: BTEX						
EP080: BTEX - (QC Lot: 56715)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	----	1	100	80	118
	0.2 mg/kg	<0.2	----	----	----	----
Toluene	0.2 mg/kg	----	1	110	81	119
	0.2 mg/kg	<0.2	----	----	----	----
Ethylbenzene	0.2 mg/kg	----	1	108	80	120
	0.2 mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	0.2 mg/kg	----	1	110	79	119
	0.2 mg/kg	<0.2	----	----	----	----
ortho-Xylene	0.2 mg/kg	----	1	110	80	119
	0.2 mg/kg	<0.2	----	----	----	----
EP080: BTEX - (QC Lot: 56775)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	108	80	118
Toluene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	109	81	119
Ethylbenzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	108	80	120
meta- & para-Xylene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	109	79	119
ortho-Xylene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	109	80	119

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 57236)				mg/kg	mg/kg	%	%	%
Arsenic	ES0502305-018	Anonymous	5 mg/kg	50	7	76.6	70	130
Cadmium			1 mg/kg	50	<1	92.0	70	130
Chromium			2 mg/kg	50	20	97.6	70	130
Copper			5 mg/kg	250	14	89.7	70	130
Lead			5 mg/kg	250	18	84.7	70	130
Nickel			2 mg/kg	50	15	92.8	70	130
Zinc			5 mg/kg	250	24	90.3	70	130
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 57234)				mg/kg	mg/kg	%	%	%
Mercury	ES0502302-001	Anonymous	0.1 mg/kg	5	<0.1	111	70	130
EP074A: Monocyclic Aromatic Hydrocarbons								
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 56774)				mg/kg	mg/kg	%	%	%
Benzene	ES0502345-017	Anonymous	0.5 mg/kg	2.5	<0.5	91.8	70	130
Toluene			0.5 mg/kg	2.5	<0.5	93.0	70	130
EP074E: Halogenated Aliphatic Compounds								
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%	%	%
1,1-Dichloroethene	ES0502345-017	Anonymous	0.5 mg/kg	2.5	<0.5	96.9	70	130
Trichloroethene			0.5 mg/kg	2.5	<0.5	91.2	70	130
EP074F: Halogenated Aromatic Compounds								
EP074F: Halogenated Aromatic Compounds - (QC Lot: 56774)				mg/kg	mg/kg	%	%	%
Chlorobenzene	ES0502345-017	Anonymous	0.5 mg/kg	2.5	<0.5	90.6	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 57051)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0502265-030	Anonymous	0.5 mg/kg	10	<0.5	96.9	70	130
Pyrene			0.5 mg/kg	10	<0.5	96.6	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56715)				mg/kg	mg/kg	%	%	%

ALS Environmental

Matrix Type: SOIL

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
C6 - C9 Fraction	ES0502305-011	Anonymous	2 mg/kg	26	<2	100	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 56775)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0502345-017	Anonymous	2 mg/kg	26	<2	97.7	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 57052)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0502265-028	Anonymous	50 mg/kg	700	<50	71.2	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	86.0	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	92.2	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 56715)				mg/kg	mg/kg	%	%	%
Benzene	ES0502305-011	Anonymous	0.2 mg/kg	2.5	<0.2	102	70	130
Toluene			0.2 mg/kg	2.5	<0.2	106	70	130
Ethylbenzene			0.2 mg/kg	2.5	<0.2	100	70	130
meta- & para-Xylene			0.2 mg/kg	2.5	<0.2	107	70	130
ortho-Xylene			0.2 mg/kg	2.5	<0.2	98.3	70	130
EP080: BTEX - (QC Lot: 56775)				mg/kg	mg/kg	%	%	%
Benzene	ES0502345-017	Anonymous	0.2 mg/kg	2.5	<0.2	100	70	130
Toluene			0.2 mg/kg	2.5	<0.2	88.9	70	130
Ethylbenzene			0.2 mg/kg	2.5	<0.2	99.5	70	130
meta- & para-Xylene			0.2 mg/kg	2.5	<0.2	101	70	130
ortho-Xylene			0.2 mg/kg	2.5	<0.2	92.9	70	130

A Campbell Brothers Limited Company

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MS ANNE NORTHWAY	**Contact**	:	Greg Vogel		
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502313**
						Amendment No.	:
Project	:	E12723/4	**Quote number**	:	----	**Date received**	: 29 Mar 2005
Order number	:	- Not provided -				**Date issued**	: 6 Apr 2005
C-O-C number	:	30613-30614+31191					
Site	:	- Not provided -					
E-mail	:	anne_northway@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 3
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 2

This Interpretive Quality Control Report was issued on 6 Apr 2005 for the ALS work order reference ES0502313 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	----	----	----	**1 Apr 2005**	28 Mar 2005	**Fail by 3 days**
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	----	----	----	**1 Apr 2005**	30 Mar 2005	**Fail by 1 day**
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	**1 Apr 2005**	17 Sep 2005	Pass	**4 Apr 2005**	17 Sep 2005	Pass
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**1 Apr 2005**	19 Sep 2005	Pass	**4 Apr 2005**	19 Sep 2005	Pass
EG035T: Total Mercury by FIMS							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	**1 Apr 2005**	18 Apr 2005	Pass	**4 Apr 2005**	18 Apr 2005	Pass
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**1 Apr 2005**	20 Apr 2005	Pass	**4 Apr 2005**	20 Apr 2005	Pass
EP071: TPH - Semivolatile Fraction							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	**1 Apr 2005**	4 Apr 2005	Pass	**4 Apr 2005**	11 May 2005	Pass
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**1 Apr 2005**	6 Apr 2005	Pass	**4 Apr 2005**	11 May 2005	Pass
EP074: Volatile Organic Compounds							
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**31 Mar 2005**	6 Apr 2005	Pass	**1 Apr 2005**	6 Apr 2005	Pass
EP075(SIM): PAH/Phenols (SIM)							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	**1 Apr 2005**	4 Apr 2005	Pass	**4 Apr 2005**	11 May 2005	Pass
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**1 Apr 2005**	6 Apr 2005	Pass	**4 Apr 2005**	11 May 2005	Pass
EP080: TPH Volatiles/BTEX							
Soil Glass Jar - Unpreserved DUP D14	**22 Mar 2005**	**31 Mar 2005**	4 Apr 2005	Pass	**1 Apr 2005**	4 Apr 2005	Pass
Soil Glass Jar - Unpreserved DUP D18	**24 Mar 2005**	**31 Mar 2005**	6 Apr 2005	Pass	**1 Apr 2005**	6 Apr 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	2	11	18.2	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	12	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds	2	16	12.5	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	7	14.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	4	40	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	7	14.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	7	14.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	7	14.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Matrix Type: SOIL

Summary of Outliers - Analysis Holding times and Preservation

Method / **Container** / Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	*Due for extraction*	*Pass?*	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
DUP D14	**22 Mar 2005**	----	----	----	**1 Apr 2005**	28 Mar 2005	**Fail by 3 days**
EA055-103: Moisture Content							
Soil Glass Jar - Unpreserved							
DUP D18	**24 Mar 2005**	----	----	----	**1 Apr 2005**	30 Mar 2005	**Fail by 1 day**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - 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.

Analytical Methods

ASB-SOL : Asbestos - Count (Solid) - Asbestos Count on solid matrices conducted by Subcontracting Laboratory

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

***EG005T* : Total Metals by ICP-AES -** (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EG035T : Total Mercury by FIMS - AS 3550, APHA 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. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the extract. 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.

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP074 : Volatile Organic Compounds - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MS ANNE NORTHWAY**
Address	:	8/12 MARS ROAD LANE COVE WEST NSW AUSTRALIA 2066
Project	:	**E12723/4**
Order number	:	**- Not provided -**
C-O-C Number	:	**30613-30614+31191**
Site	:	**- Not provided -**
Sampler	:	**A.GILLIS**
E-mail	:	anne_northway@coffey.com.au
Telephone	:	(02)9911-1000
Facsimile	:	(02)9911-1001

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502313**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	29 Mar 2005
SRA Issue Date	:	31 Mar 2005
Scheduled Reporting Date	:	**7 Apr 2005**

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		: ----
No. of eskies/boxes	:	1 HARD	**No. of samples**	**- Received**	3
Security Seal	:	Intact.		**- Analysed**	2

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : *This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.*

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502313
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		ASB-SOL Asbestos - Count (Solid)	**S-02** 8 Metals (incl. Digestion)	**S-07** TPH/BTEX/PAH (SIM)	**S-10** TPH/VOC/PAH						
ES0502313-001	DUP D14 - 22 Mar 2005		●	●							
ES0502313-002	DUP D18 - 24 Mar 2005	●	●		●						
ES0502313-003	DUP D16 - 23 Mar 2005										
	Total(s) :	1	2	1	1						

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502313
Project	: E12723/4	**ALS Quote Reference**	: ----

ALS Environmental

Requested Reports

- **MS ANNE NORTHWAY**

-	Certificate of Analysis (PDF)	Email	anne_northway@coffey.com.au
-	Interpretive Quality Control Report - NEPM	Email	anne_northway@coffey.com.au
-	Quality Control Report - NEPM	Email	anne_northway@coffey.com.au
-	Subcontracted Reports	Email	anne_northway@coffey.com.au
-	ENMRG Export Format	Email	anne_northway@coffey.com.au
-	Chain of Custody Acknowledgement	Email	anne_northway@coffey.com.au
-	Sample Receipt Advice - Comprehensive	Email	anne_northway@coffey.com.au
-	Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

P.02
TO 88740515
FROM Coffey Sydney
29-MAR-2005 09:49

AREA D

No: 30613

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 2 of 3

Coffey

Dispatch to: (Address & Phone No.) ANDEL	Sampled by: Adam Coffey	Consigning Office: SYD Date Dispatched: 29/3/05
Attention: JULIE EDMON	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Coffey	29/3/05	12 pm	Kerry Stefanovic ALS Syd DK	29/3	3pm.
Adam Coffey					

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs + BTEX	Metals:	Sample Condition on Receipt
	Soil	Glass, Unpreserved	CTP12 2.3-2.6	23/3/05	HOLD AND WAIT FOR INSTRUCTIONS				
			DUP D15						
			DUP D16 (1)		SEND TO ALS				
			TB D23/3/05						
			TS D23/3/05		HOLD AND WAIT FOR INSTRUCTIONS				
	Soil	Glass, Unpreserved	CTP13 0.0-0.2	24/3/05					
			" 0.4-0.6						
			" 0.7-0.9						
			CTP14 0.0-0.2						
			" 1.0-1.2						
			" 1.3-1.4						
			" 2.0-2.2						
			CTP15 0.0-0.2						
			" 1.0-1.2						
			" 1.4-1.6						
			" 1.6-1.8						
			" 1.8-2.2						

ALS Environmental
Sydney
Work Order
ES0502313
Report Version: WOLabel 1.00
Telephone : 61-2-87848555

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Colour: WHITE: Sign on release YELLOW: If dispatched by Interstate Lab, Lab to sign on receipt and fax back to Coffey PINK: To be returned with results

P.03
TO 88740515
FROM Coffey Sydney
29-MAR-2005 09:49

AREAD

No: 30614

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4

Sheet 3 of 3

Coffey

Dispatch to: (Address & Phone No.) ANDEL	Sampled by: Adam Collis	Consigning Office: SYD Date Dispatched: 29/3/05
Attention: Julie Edmon	Project Manager: (report results to) ANNE NORTHWAY	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Adam Collis Adam Collis	29/3/05	12pm	Kerry Stefanovic also Rpd ck	29/3/05	3pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Sample Condition on Receipt
	Soil	Glass, Unpreserved	CTP16 0.0-0.2	29/3/05					
	"	"	" 1.0-1.2						
	"	"	" 1.3-1.7						
			CTP17 0.0-0.2						
			" 1.0-1.2						
			" 2.0-2.2						
			" 3.0-3.2						
			" 3.8-4.0						
			CTP18 0.0-0.2						
			" 0.3-0.4						
			" 1.0-1.2						
			CTP19 0.0-0.2						
			" 0.2-0.4						
			" 1.0-1.3						
		Plastic Bag	PACM CTP17 1.7						
	Soil	Glass, Unpreserved	DUP D17						
	"	"	DUP D18 (2)						

HOLD AND WAIT FOR INSTRUCTIONS

SEND TO ALS

ALS Environmental
Sydney
Work Order
ES0502313

Report Version: WOLabel 1.00

Telephone : 61-2-87848555

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Area	Sample ID	Date Collected	COMMENTS	Analysis								
				TPH/BTEX/PAH	BTEX	TPH	TPH/VOC/PAH	8 Metals	OCP	PCB	Asbestos	SPOCAS
Area D	DUP D14	22/03/2005	1	1				1				
	DUP D16	23/03/2005	3									
	DUP D18	24/03/2005	2				1	1			1	
			No. of Analyses	1	0	0	1	2	0	0	1	0

CONTRACT WORK
BACTO ASBESTOS

ALS Environmental
Sydney
Work Order
ES0502313
Report Version: AliquotLabel 1.01
Telephone : 61-2-87848555

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 3**
Contact	:	MR GLENN HARRIS	**Contact**	:	Greg Vogel		
Address	:	P O BOX 125 NORTH RYDE NSW AUSTRALIA 1670	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502797**
Project	:	- Not provided -	***Quote number***	:	----	**Date received**	: 14 Apr 2005
Order number	:	- Not provided -				**Date issued**	: 15 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	glen_harris@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This final report for the ALSE work order reference ES0502797 supersedes any previous reports with this reference.
Results apply to the sample as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Analytical results for samples submitted
- Surrogate control limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or *insuffient sample amount* for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits).
Abbreviations: ***CAS number*** = *Chemical Abstract Services number,* ***LOR*** = *Limit of Reporting.* ***# Indicates a raised LOR, * Indicates failed Surrogate Recoveries.***
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Analytical Results

				Client Sample ID :	**DUP2**			
				Sample Matrix Type / Description :	WATER / WATER			
				Sample Date / Time :	(23 Mar 2005) (15:00)			
				Laboratory Sample ID :	**ES0502797-001**			
Analyte	***CAS number***	***LOR***	***Units***					
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L		0.010			
Cadmium	7440-43-9	0.0001	mg/L		0.0010			
Chromium	7440-47-3	0.001	mg/L		0.001			
Copper	7440-50-8	0.001	mg/L		0.008			
Lead	7439-92-1	0.001	mg/L		0.030			
Nickel	7440-02-0	0.001	mg/L		0.029			
Zinc	7440-66-6	0.001	mg/L		0.054			
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L		<0.0001			

Surrogate Control Limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

- **No surrogates present on this report.**

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 4**
Contact	:	MR GLENN HARRIS	**Contact**	: Greg Vogel			
Address	:	P O BOX 125 NORTH RYDE NSW AUSTRALIA 1670	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0502797**
					Amendment No.	:	
Project	:	- Not provided -	**Quote number**	: ----	**Date received**	:	14 Apr 2005
Order number	:	- Not provided -			**Date issued**	:	15 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	glen_harris@coffey.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	(02)9911-1000	**Telephone**	: 61-2-87848555	**Received**	:	1
Facsimile	:	(02)9911-1001	**Facsimile**	: 61-2-87848500	**Analysed**	:	1

This final report for the ALSE work order reference ES0502797 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - QUALITY, SERVICE and TECHNOLOGY provided GLOBALLY

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Peter Dickenson	Inorganics - NATA 10911 (Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EG020F: Dissolved Metals by ICP-MS						
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 61775)				mg/L	mg/L	%
ES0502797-001	DUP2	Arsenic	0.001 mg/L	0.010	0.010	0.0
		Cadmium	0.0001 mg/L	0.0010	0.0010	0.0
		Chromium	0.001 mg/L	0.001	0.001	0.0
		Copper	0.001 mg/L	0.008	0.004	66.7
		Lead	0.001 mg/L	0.030	0.029	3.4
		Nickel	0.001 mg/L	0.029	0.029	0.0
		Zinc	0.005 mg/L	0.054	0.055	1.8
EG035F: Dissolved Mercury by FIMS						
EG035F: Dissolved Mercury by FIMS - (QC Lot: 61825)				mg/L	mg/L	%
EM0502226-001	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
ES0502723-006	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term **Laboratory Control Sample (LCS)** refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: WATER

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

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG020F: Dissolved Metals by ICP-MS						
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 61775)		mg/L	mg/L	%	%	%
Arsenic	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	102	70	130
Cadmium	0.0001 mg/L	<0.0001	----	----	----	----
	0.0001 mg/L	----	0.1	94.0	70	130
Chromium	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	93.0	70	130
Copper	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	110	70	130
Lead	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	102	70	130
Nickel	0.001 mg/L	<0.001	----	----	----	----
	0.001 mg/L	----	0.1	105	70	130
Zinc	0.005 mg/L	<0.005	----	----	----	----
	0.005 mg/L	----	0.1	114	70	130
EG035F: Dissolved Mercury by FIMS						
EG035F: Dissolved Mercury by FIMS - (QC Lot: 61825)		mg/L	mg/L	%	%	%
Mercury	0.0001 mg/L	<0.0001	----	----	----	----
	0.0001 mg/L	----	0.010	96.6	70	130

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EG020F: Dissolved Metals by ICP-MS								
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 61775)				mg/L	mg/L	%	%	%
Arsenic	ES0502797-001	DUP2	0.001 mg/L	0.2	0.010	116	70	130
Cadmium			0.0001 mg/L	0.05	0.0010	100	70	130
Chromium			0.001 mg/L	0.2	0.001	96.0	70	130
Copper			0.001 mg/L	0.2	0.008	111	70	130
Lead			0.001 mg/L	0.2	0.030	91.5	70	130
Nickel			0.001 mg/L	0.2	0.029	108	70	130
Zinc			0.005 mg/L	0.2	0.054	121	70	130
EG035F: Dissolved Mercury by FIMS								
EG035F: Dissolved Mercury by FIMS - (QC Lot: 61825)				mg/L	mg/L	%	%	%
Mercury	EM0502226-001	Anonymous	0.0001 mg/L	0.0100	<0.0001	99.0	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**COFFEY GEOSCIENCES PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 5**
Contact	:	MR GLENN HARRIS	**Contact**	:	Greg Vogel		
Address	:	P O BOX 125 NORTH RYDE NSW AUSTRALIA 1670	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0502797**
						Amendment No.	:
Project	:	- Not provided -	**Quote number**	:	----	**Date received**	: 14 Apr 2005
Order number	:	- Not provided -				**Date issued**	: 15 Apr 2005
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	glen_harris@coffey.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	(02)9911-1000	**Telephone**	:	61-2-87848555	**Received**	: 1
Facsimile	:	(02)9911-1001	**Facsimile**	:	61-2-87848500	**Analysed**	: 1

This Interpretive Quality Control Report was issued on 15 Apr 2005 for the ALS work order reference ES0502797 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: WATER

Analysis Holding Time and Preservation

Method / **Container** / Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG020A-F: Dissolved Metals by ICP-MS - Suite A							
Clear Plastic Bottle - Nitric Acid; Filtered							
DUP2	***23 Mar 2005***	----	----	----	**15 Apr 2005**	19 Sep 2005	Pass
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered							
DUP2	**23 Mar 2005**	----	----	----	**15 Apr 2005**	20 Apr 2005	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: WATER ***Frequency of Quality Control Samples***

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	1	**100.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	2	16	**12.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	1	**100.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	16	**6.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	1	**100.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	16	**6.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG020A-F: Dissolved Metals by ICP-MS - Suite A	1	1	**100.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS	1	16	**6.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: WATER ***Method Reference Summary***

Analytical Methods

EG020A-F : Dissolved Metals by ICP-MS - Suite A - (APHA 20th ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): 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.

EG035F : Dissolved Mercury by FIMS - AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) 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 (1999) Schedule B(3) (Appdx. 2)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT ADVICE (SRA)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MR GLENN HARRIS**
Address	:	P O BOX 125 NORTH RYDE NSW AUSTRALIA 1670
Project	:	**- Not provided -**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	glen_harris@coffey.com.au
Telephone	:	(02)9911-1000
Facsimile	:	(02)9911-1001

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0502797**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	14 Apr 2005
SRA Issue Date	:	15 Apr 2005
Scheduled Reporting Date	:	**15 Apr 2005**

Delivery Details

Mode of Delivery	:	Samples on hand.	**Temperature**		: Ambient
No. of eskies/boxes	:	1 sample	**No. of samples**	**- Received**	1
Security Seal	:	Not intact.		**- Analysed**	1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502797
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		W-02 8 Metals									
ES0502797-001	**DUP2 - 23 Mar 2005**	●									
	Total(s) :	**1**									

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0502797
Project	: - Not provided -	**ALS Quote Reference**	: ----

ALS Environmental

Requested Reports

- **MR GLENN HARRIS**

-	Interpretive Quality Control Report - NEPM	Email	glen_harris@coffey.com.au
-	Quality Control Report - NEPM	Email	glen_harris@coffey.com.au
-	Certificate of Analysis (PDF)	Email	glen_harris@coffey.com.au
-	ENMRG Export Format	Email	glen_harris@coffey.com.au
-	Sample Receipt Advice - Comprehensive	Email	glen_harris@coffey.com.au
-	Chain of Custody Acknowledgement	Email	glen_harris@coffey.com.au
-	Invoice	Print	

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

Kerry Stefanovic

From: Greg Vogel
Sent: Thursday, 14 April 2005 3:28 PM
To: Samples Sydney; Barbara Hanna; Nazeeh Aoun; Peter Dickenson
Subject: FW: ES0502250

Importance: High

PLEASE DISREGARD THE PREVIOUS E-MAIL ON THIS WORK ORDER- HE REQUIRES THE RESULTS TOMORROW AFTERNOON!!!!!!

PLEASE REBATCH TODAY

PETE,

THIS IS ONE SAMPLE.... STD 8 "DISSOLVED METALS"

CHEERS

Greg Vogel

ALS Environmental
Sydney
Work Order
ES0502797
Report Version: WOLabel 1.00
Telephone : 61-2-87848555

Laboratory Manager
ALSE Smithfield
277-289 Woodpark Rd
Smithfield NSW 2164

e-mail greg.vogel@alsenviro.com
Ph: (02) 8784 8555
Fax:(02) 8784 8500

-----Original Message-----
From: Glenn Harris
[mailto:glenn_harris@coffey.com.au]
Sent: Wednesday, 13 April 2005 4:11 PM
To: Greg Vogel
Subject: ES0502250

Greg,

A water sample was sent in for analysis from Coffey, batch number was ES0502250. I've just spoken with Peter Dickinson and he has advised me to sent this email in lieu of a COC.

The sample name was Dup 2, unfortunately I also required metals analysis on this sample (a field filtered sample was supplied) but wasn't noted on the COC due to an oversight on my part.

Could you please put this sample through for the

ALS Environmental
Sydney
Work Order
ES0502797

Telephone : 61-2-87848555

Rebatch of ES0502250

1X250ml Red Dup2

Received by ALS
Joy Stephen
14-4-5
3.50pm

This document is issued in accordance with NATA's accreditation requirements
Accredited for compliance with ISO/IEC 17025
NATA Accreditation number: 1464
This document may not be reproduced except in full

ANALYTICAL SERVICES DIVISION
ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E2421
Attention	:	Mr Andrew Barwick
Client	:	Coffey Geosciences Pty Ltd P.O. Box 125 NORTH RYDENSW 2113
Samples	:	12
Reference/Order	:	E12723/4/39778
Project	:	E12723/4
Received Samples	:	30/06/05
Instructions	:	30/06/05
Date Reported	:	12/07/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

Darrel Luck Ass. Dip. Applied Sc.(Chem.)
Team Leader - Metals

Peter Keyte B.Sc.(Chem.)
Senior Chemist - Inorganics

Minh Nguyen B.Sc.(App. Chem.), MSC (Env. Tox.)
Senior Chemist - Organics

amdel

Report No. : 5E2421

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised
E0230	TPH C6-C9 by purge & trap	01/07/05	01/07/05	GTO 094
E0221F	TPH (C10-C36)	05/07/05	06/07/05	GTO 094
E0010	Benzene,Toluene,Ethylbenzene & Xylene	01/07/05	01/07/05	GTO 094
E4870	Dissolved Metals by ICP-MS	08/07/05	08/07/05	DLU 093
E4850	Mercury	05/07/05	05/07/05	DLU 093
E0110	Polycyclic Aromatic Hydrocarbons	05/07/05	06/07/05	MFA 095
E2640	Phosphorus-Total	06/07/05	11/07/05	DBL 101
E2330	Ammonia as N	04/07/05	04/07/05	DBL 101
E2550	Nitrate-N	04/07/05	04/07/05	DBL 101
E2560	Nitrite-N	04/07/05	04/07/05	DBL 101
E2570	Total Nitrogen	12/07/05	12/07/05	DBL 101
E2770	TKN	06/07/05	11/07/05	DBL 101

amdel

NATA Signatory

Initials	Name	Sections/Methods
MFA	Mark Fahmy	094, 095, 096
DJA	Dilanthi Jayamanne	094, 096
GTO	Greg Towers	094, 096
GPE	Geoff Peterson	095, 096
DLU	Darrel Luck	093, 096
MAV	Merrin Avery	101, 096
DBL	Dianne Blane	101, 096
NCO	Nathan Cooper	101, 096
AGR	Alison Graham	101, 096
PKE	Peter Keyte	101, 096
ZSI	Zoe Sin	096, 097, 098

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208134	E208135	E208136	E208137	E208138
		MW1	MW2	MW3	MW4	MW5
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	nd	nd	nd	nd
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	nd	nd	nd	nd
C15-C28 Fraction	100	nd	nd	nd	nd	nd
C29-C36 Fraction	100	nd	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	89%	81%	86%	84%	86%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208139	E208140	E208141	E208142	E208143
		MW11	MW12	MW13	MW14	DUP1
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd	nd	nd	nd	nd
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	nd	nd	nd	nd	nd
C15-C28 Fraction	100	nd	nd	nd	nd	nd
C29-C36 Fraction	100	nd	nd	nd	nd	nd
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethylbenzene	1	nd	nd	nd	nd	nd
m&p-Xylene	2	nd	nd	nd	nd	nd
o-Xylene	1	nd	nd	nd	nd	nd
4-Bromofluorobenzene-SURROGATE	1	84%	85%	117%	87%	83%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208144	E208145			
		TS1	TB1			
	Sample Id	29.6.05	29.6.05			
	PQL					
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	--	--			
E0221 TPH in Water (ug/L)						
C10-C14 Fraction	20	--	--			
C15-C28 Fraction	100	--	--			
C29-C36 Fraction	100	--	--			
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	13	nd			
Toluene	1	12	nd			
Ethylbenzene	1	11	nd			
m&p-Xylene	2	23	nd			
o-Xylene	1	12	nd			
-Bromofluorobenzene-SURROGATE	1	97%	80%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/39778

Project : E12723/4

Analyte	Lab No	E208134	E208135	E208136	E208137	E208138
		MW1	MW2	MW3	MW4	MW5
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	0.001	0.006	nd	nd	nd
Cadmium	0.0001	nd	nd	nd	nd	0.0002
Chromium	0.001	0.001	nd	nd	nd	nd
Copper	0.001	nd	nd	nd	nd	nd
Nickel	0.001	nd	0.001	0.002	nd	0.002
Lead	0.001	nd	0.001	nd	nd	nd
Zinc	0.002	nd	0.044	0.318	0.003	0.359
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208139	E208140	E208141	E208142	E208143
		MW11	MW12	MW13	MW14	DUP1
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd	nd	nd	0.003	0.004
Cadmium	0.0001	0.0001	0.0002	nd	nd	nd
Chromium	0.001	nd	nd	nd	0.001	nd
Copper	0.001	nd	nd	nd	nd	nd
Nickel	0.001	0.002	0.002	0.002	nd	0.001
Lead	0.001	nd	nd	nd	nd	nd
Zinc	0.002	0.335	0.359	0.223	0.003	0.035
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/39778

Project : E12723/4

Analyte	Lab No	E208134	E208135	E208136	E208137	E208138
		MW1	MW2	MW3	MW4	MW5
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	nd	nd	nd	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	nd	nd	nd	nd
Fluorene	1	nd	nd	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	84%	85%	88%	85%	96%
Anthracene-D10-SURROGATE	1	89%	87%	88%	92%	97%
p-Terphenyl-D14-SURROGATE	1	92%	88%	90%	94%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208139	E208140	E208141	E208142	E208143
		MW11	MW12	MW13	MW14	DUP1
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd	nd	nd	nd	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	nd	nd	nd	nd
Fluorene	1	nd	nd	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
Benz(a)anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
Benzo(b) & (k)fluoranthene	2	nd	nd	nd	nd	nd
Benzo(a)pyrene	1	nd	nd	nd	nd	nd
Indeno(1.2.3-cd)pyrene	1	nd	nd	nd	nd	nd
Dibenz(a.h)anthracene	1	nd	nd	nd	nd	nd
Benzo(g.h.i)perylene	1	nd	nd	nd	nd	nd
Total USEPA Priority PAHs	1	nd	nd	nd	nd	nd
2-Fluorobiphenyl-SURROGATE	1	82%	92%	89%	76%	91%
Anthracene-D10-SURROGATE	1	88%	93%	92%	79%	97%
p-Terphenyl-D14-SURROGATE	1	88%	94%	92%	79%	99%

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421

Client : Coffey Geosciences Pty Ltd

Reference : E12723/4/39778

Project : E12723/4

Analyte	Lab No	E208134	E208135	E208136	E208137	E208138
		MW1	MW2	MW3	MW4	MW5
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E2640 Total Phosphorus in Water						
Phosphorus	0.02	* nd	0.05	nd	0.14	nd
E2330 Ammonia as N in Water						
Ammonia as N	0.01	8.74	0.06	0.03	1.62	0.04
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd	0.07	nd	nd	nd
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd	nd	nd	nd	nd
Total Nitrogen	0.1	6.8	0.2	0.2	2.8	0.2
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	*U 6.8	0.2	0.1	2.8	0.2

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

amdel

Job Number : 5E2421
Client : Coffey Geosciences Pty Ltd
Reference : E12723/4/39778
Project : E12723/4

Analyte	Lab No	E208139	E208140	E208141	E208142	E208143
		MW11	MW12	MW13	MW14	DUP1
	Sample Id	29.6.05	29.6.05	29.6.05	29.6.05	29.6.05
	PQL					
E2640 Total Phosphorus in Water						
Phosphorus	0.02	nd	nd	nd	0.10	0.05
E2330 Ammonia as N in Water						
Ammonia as N	0.01	0.03	0.04	0.04	0.57	0.07
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd	nd	nd	nd	0.05
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd	nd	nd	nd	nd
Total Nitrogen	0.1	0.2	0.2	0.2	1.6	0.3
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	0.2	0.2	0.2	1.6	0.2

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

No: 39778

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4 Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No:) AMDEL LIMITED - CARDIFF OFFICE	Sampled by: ANTON DELAC	Consigning Officer: SYDNEY Date Dispatched: 30.6.2005
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW BARWICK	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	30.6.05	4.40		30/6/05	4.40
				30/6	5.10
				47	2:30pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	Total Phosphorus	Ammonia	Nitrate	Nitrite	Total Kjeldahl Nitrogen (TKN)	Hold	Sample Condition on Receipt
E208134	WATER	(COMBINATION OF AMDEL	MW1	29.6.05											
35		AND ALS SAMPLING	2												
36		CONTAINERS WITH ICE -	3												
37		AS APPROVED BY JULIE	4												
38		EDMOND)	5												
39			11												
40			12												
41			13												
42			14												
43			DUP1												
[redacted]			MW2 DUP1												
44		40mL VIAL	TS1												
45		" "	TB1												

30 JUN 2005

SYDNEY

Special Laboratory Instructions: *PLEASE FORWARD ALL SAMPLE CONTAINERS MARKED WITH MW2 DUP1 TO ALS FOR TESTING.

Detection Limits:

Turnaround Required: FRIDAY 8TH JULY 2005 (AS PER JE)

LABORATORY JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

2005/11-01

amdel

AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Job No. 5E2421

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter	Holding Times
Soils	
Volatile and Semi-Volatile Organic Analysis.	Extracted in 14 days, analysed within 40 days.
Metals	Extracted and analysed within 28 days-6 months.
Inorganics*	Extracted and analysed within 7-28 days.
TCLPs*	Extracted and analysed within 14 days, (Zero Headspace-TCLP 7 days).
Waters	
Volatile Organic Analysis	Analysed within 7 days (USEPA requires 14 days).
Semi-Volatile Organic Analysis	Extracted in 7 days, analysed within 40 days.
Inorganics*	Analysed within 24 hrs-28 days.
Metals (dissolved metals should be supplied field filtered)	Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity	Yes/NO/NA
Chain of Custody / instructions received with samples	Yes
Custody seals were received intact, if used	NA
Samples were received chilled and in good condition	Yes
Samples received appropriately preserved for all tests	Yes
VOC/SVOC samples were received in teflon lined containers	Yes
Samples received with Zero Headspace	Yes
Chain of Custody completed and attached (if applicable)	Yes

Chromatography Calibration/Acceptence Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)	Yes
Reference standard meets acceptance criteria (+/-10%)	Yes
Recalibration standard meets acceptance criteria (+/-15%)	Yes
Internal standard recovery acceptable.	Yes

This document is issued in accordance
with NATA's accreditation requirements
Accredited for compliance with ISO/IEC 17025
NATA Accreditation number: 1464
This document may not be reproduced except in full

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Amdel QA/QC Compliance Assessment

	Compliance
Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).	Please see body of report
Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)	Please see body of report
Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)	Yes
Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples	Yes
Laboratory duplicates meet acceptance criteria <4 PQL - +/- 2 PQL 4-10 PQL - 25-50 or 50% RPD >10 PQL - 10-30 or 30% RPD	Please see body of report
Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).	Yes

N/A=Not Applicable.

* Phenols 50% - 130% recovery
* SVOCs 60% - 130% recovery
* Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

Darrel Luck Ass. Dip. Applied Sc.(Chem.)
Team Leader - Metals

Peter Keyte B.Sc.(Chem.)
Senior Chemist - Inorganics

Minh Nguyen B.Sc.(App. Chem.), MSC (Env. Tox.)
Senior Chemist - Organics

amdel

AMDEL STANDARD LABORATORY QUALIFIER CODES.

Job NO. 5E2421

Qualifier Codes	Description
*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
--	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material >5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therfore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficent sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

amdel

Job Number : 5E2421

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0230 TPH in Water by P&T/GC-MS (ug/L) (E208134)							
C6-C9 Fraction	200	ISM					
E0221 TPH in Water (ug/L) (E208135)							
C15-C28 Fraction	5500	4180		76%			
E0010 BTEX (P&T) in Water (ug/L) (E208134)							
Benzene	10	ISM					
Toluene	10	ISM					
Ethylbenzene	10	ISM					
m&p-Xylene	20	ISM					
o-Xylene	10	ISM					

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0230 TPH in Water by P&T/GC-MS (ug/L)							
C6-C9 Fraction	200	220			105%		
E0221 TPH in Water (ug/L)							
C15-C28 Fraction	5500	4690			85%		
E0010 BTEX (P&T) in Water (ug/L)							
Benzene	10	11			105%		
Toluene	10	11			105%		
Ethylbenzene	10	10			96%		
m&p-Xylene	20	20			99%		
o-Xylene	10	11			107%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0230 TPH in Water by P&T/GC-MS (ug/L) (E208134)								
C6-C9 Fraction	ISD	nd						
E0221 TPH in Water (ug/L) (E208134)								
C15-C28 Fraction	nd	nd						
E0010 BTEX (P&T) in Water (ug/L) (E208134,E208135)								
Benzene	ISD	nd			ISD	nd		
Toluene	ISD	nd			ISD	nd		
Ethylbenzene	ISD	nd			ISD	nd		
m&p-Xylene	ISD	nd			ISD	nd		
o-Xylene	ISD	nd			ISD	nd		

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0230 TPH in Water by P&T/GC-MS (ug/L)						
C6-C9 Fraction	20	nd				
E0221 TPH in Water (ug/L)						
C15-C28 Fraction	100	nd				
E0010 BTEX (P&T) in Water (ug/L)						
Benzene	0.5	nd				
Toluene	1	nd				
Ethylbenzene	1	nd				
m&p-Xylene	2	nd				
o-Xylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E4870 Dissolved Metals in Waters (E208134)							
Arsenic	0.100	0.100		100%			
Cadmium	0.1000	0.10		102%			
Chromium	0.100	0.106		106%			
Copper	0.100	0.105		105%			
Nickel	0.100	0.103		103%			
Lead	0.100	0.105		105%			
Zinc	0.100	0.107		107%			
E4850 Dissolved Mercury in Waters (E208134)							
Mercury	0.01	0.010		100%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E4870 Dissolved Metals in Waters							
Arsenic	0.100	0.103			103%		
Cadmium	0.1000	0.096			96%		
Chromium	0.100	0.102			102%		
Copper	0.100	0.101			101%		
Nickel	0.100	0.100			100%		
Lead	0.100	0.099			99%		
Zinc	0.100	0.101			101%		
E4850 Dissolved Mercury in Waters							
Mercury	0.010	0.009			90%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E4870 Dissolved Metals in Waters (E208134)								
Arsenic	0.001	0.001	0.001	0%				
Cadmium	nd	nd						
Chromium	0.002	0.001	0.002	66%				
Copper	nd	nd						
Nickel	nd	nd						
Lead	nd	nd						
Zinc	nd	nd						
E4850 Dissolved Mercury in Waters (E208134)								
Mercury	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E4870 Dissolved Metals in Waters						
Arsenic	0.001	nd				
Cadmium	0.0001	nd				
Chromium	0.001	nd				
Copper	0.001	nd				
Nickel	0.001	nd				
Lead	0.001	nd				
Zinc	0.002	nd				
E4850 Dissolved Mercury in Waters						
Mercury	0.001	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Matrix Spike(s)

Analyte	Spike Level	Level Detected		Recovery Details			
		Spike 1	Spike 2	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E208136)							
Naphthalene	10	10		99%			
Acenaphthylene	10	10		103%			
Acenaphthene	10	10		104%			
Fluorene	10	10		105%			
Phenanthrene	10	11		106%			
Anthracene	10	11		105%			
Fluoranthene	10	11		110%			
Pyrene	10	11		108%			
Benz(a)anthracene	10	10		100%			
Chrysene	10	11		112%			
Benzo(b) & (k)fluoranthene	20	22		109%			
Benzo(a)pyrene	10	11		105%			
Indeno(1.2.3-cd)pyrene	10	11		107%			
Dibenz(a.h)anthracene	10	11		106%			
Benzo(g.h.i)perylene	10	11		108%			

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E0110 Priority PAH's in Water (ug/L)							
Naphthalene	10	9			89%		
Acenaphthylene	10	9			94%		
Acenaphthene	10	9			93%		
Fluorene	10	9			95%		
Phenanthrene	10	10			96%		
Anthracene	10	10			96%		
Fluoranthene	10	10			97%		
Pyrene	10	10			99%		
Benz(a)anthracene	10	9			91%		
Chrysene	10	10			102%		
Benzo(b) & (k)fluoranthene	20	20			99%		
Benzo(a)pyrene	10	9			95%		
Indeno(1.2.3-cd)pyrene	10	10			96%		
Dibenz(a.h)anthracene	10	10			95%		
Benzo(g.h.i)perylene	10	10			97%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E0110 Priority PAH's in Water (ug/L) (E208134)								
Naphthalene	nd	nd						
Acenaphthylene	nd	nd						
Acenaphthene	nd	nd						
Fluorene	nd	nd						
Phenanthrene	nd	nd						
Anthracene	nd	nd						
Fluoranthene	nd	nd						
Pyrene	nd	nd						
Benz(a)anthracene	nd	nd						
Chrysene	nd	nd						
Benzo(b) & (k)fluoranthene	nd	nd						
Benzo(a)pyrene	nd	nd						
Indeno(1.2.3-cd)pyrene	nd	nd						
Dibenz(a.h)anthracene	nd	nd						
Benzo(g.h.i)perylene	nd	nd						

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E0110 Priority PAH's in Water (ug/L)						
Naphthalene	1	nd				
Acenaphthylene	1	nd				
Acenaphthene	1	nd				
Fluorene	1	nd				
Phenanthrene	1	nd				
Anthracene	1	nd				
Fluoranthene	1	nd				
Pyrene	1	nd				
Benz(a)anthracene	1	nd				
Chrysene	1	nd				
Benzo(b) & (k)fluoranthene	2	nd				
Benzo(a)pyrene	1	nd				
Indeno(1.2.3-cd)pyrene	1	nd				
Dibenz(a.h)anthracene	1	nd				
Benzo(g.h.i)perylene	1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Laboratory Control Sample(s)

Analyte	Level	Level Detected			Recovery Details		
		Result1	Result2	Result3	Rec 1 (%)	Rec 2 (%)	Rec 3 (%)
E2640 Total Phosphorus in Water							
Phosphorus	0.40	0.38			95%		
E2330 Ammonia as N in Water							
Ammonia as N	1.0	1.00	1.04		100%	104%	
E2550 Nitrate as N in Water							
Nitrate as N	1.0	1.09			109%		
E2560 Nitrite as N in Water							
Nitrite as N	1.0	0.98	0.99		98%	100%	
E2770 Kjeldahl Nitrogen in Water							
Kjeldahl Nitrogen	1	1.2			113%		

PQL = Practical Quantitation Limit
-- = Not Applicable
nd = <PQL

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

amdel

Job Number : 5E2421

QAQC : Laboratory Duplicate(s)

Analyte	Dupl A	Dupl B	Average	RPD (%)	Dupl A	Dupl B	Average	RPD (%)
E2640 Total Phosphorus in Water (E208134)								
Phosphorus	* 0.04	* nd	* 0.04					
E2330 Ammonia as N in Water (E208134)								
Ammonia as N	6.26	8.74	7.50	33%				
E2550 Nitrate as N in Water (E208134)								
Nitrate as N	nd	nd						
E2770 Kjeldahl Nitrogen in Water (E208134)								
Kjeldahl Nitrogen	* 5.4	*U 6.8	6.2	22%				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

The number in brackets after the method header identifies the sample tested.

amdel

Job Number : 5E2421

QAQC : Method Blank(s)

ANALYTE	Sample ID PQL	Blank1	Blank2	Blank3	Blank4	Blank5
E2640 Total Phosphorus in Water						
Phosphorus	0.02	nd				
E2330 Ammonia as N in Water						
Ammonia as N	0.01	nd				
E2550 Nitrate as N in Water						
Nitrate as N	0.02	nd				
E2560 Nitrite as N in Water						
Nitrite as N	0.02	nd				
E2770 Kjeldahl Nitrogen in Water						
Kjeldahl Nitrogen	0.1	nd				

PQL = Practical Quantitation Limit
nd = <PQL
-- = Not Applicable

(S) Soils : mg/kg (ppm) dry weight
(W) Waters : mg/L (ppm) unless otherwise specified

AMDEL LTD

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Amdel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: Coffey Geosciences Pty Ltd

ATTN: Mr Andrew Barwick FAX NO: (02) 9911 1001

FROM: Client Services Cardiff

DATE: 30/06/05 PAGES: 1 of 1

If you have any queries or wish to make any adjustments to analyses performed, please contact this laboratory immediately.

Reference/Order:	E12723/4/39778
Project:	E12723/4
Our Reference Number :	5E2421
Date Received by Amdel :	30/06/05

ANALYSIS REQUESTED	AMDEL METHOD CODE	NUMBER OF SAMPLES	ESTIMATED REPORT DATE (COB)
Polycyclic Aromatic Hydrocarbons	E0110	10	
TPH C6-C9 by purge & trap	E0230	10	
TPH (C10-C36)	E0221F	10	
Benzene,Toluene,Ethylbenzene & Xylene	E0010	12	
Dissolved Metals by ICP-MS	E4870	10	
Mercury	E4850	10	
Phosphorus-Total	E2640	10	
Ammonia as N	E2330	10	
Nitrate-N	E2550	10	
Nitrite-N	E2560	10	
Total Nitrogen	E2570	10	
TKN	E2770	10	
Australian GST	GST		

Sample integrity upon receipt

*	Samples were received chilled/chilling (refer to COC for temperature records(if space provided)).	YES
*	Samples received in good condition and appropriately preserved for all tests.	YES
*	VOC/SVOC samples were received in teflon lined lids.	YES
*	VOC samples were received with Zero Headspace.	YES
*	Samples were recieved in sufficient time to allow us to meet holding time requirements.	YES
*	Some analysis has been Subcontracted	NA

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received after 4pm are considered as recieved the next working day for turnaround purposes. Surcharges for urgent turn-around requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. Any non-comformance will be recorded on the final report.

ASForm. 223

No: 39778

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723/4

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No:) AMDEL LIMITED = CARDIFF OFFICE	Sampled by: ANTON DELAC	Consigning Officer: SYDNEY Date Dispatched: 30.6.2005
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW BARWICK	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	30.6.05	4.40		30/6/05	4.40
				30/6	5.10
			J. Tabar	4/7	2.30pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	TOTAL PHOSPHORUS	AMMONIA	NITRATE	NITRITE	TOTAL KJELDAHL NITROGEN (TKN)	HOLD	Sample Condition on Receipt
E20813435	WATER	COMBINATION OF AMDEL AND ALS SAMPLING CONTAINERS WITH ICE - AS APPROVED BY JULIE EDMOND	MW1	29.6.05											
36			2												
37			3												
38			4												
39			5												
40			11												
41			12												
42			13												
43			14												
[redacted]			DUP1												
			MW2 DUP1												
44		40mL VIAL	TS1												
45		" "	TB1												

30 JUN 2005

Special Laboratory Instructions: *PLEASE FORWARD ALL SAMPLE CONTAINERS MARKED WITH MW2 DUP1 TO ALS FOR ANALYSIS.

Detection Limits:

Turnaround Required: FRIDAY 8th JULY 2005 (AS PER JE)

ALS LABORATORY JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

20053/1-01

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: 61-2-87848555 Facsimile: 61-2-87848500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**COFFEY GEOSCIENCES PTY LTD**
Contact	:	**MR ANDREW BARWICK**
Address	:	P O BOX 125 NORTH RYDE NSW AUSTRALIA 1670
Project	:	**E12723 4**
Order number	:	**- Not provided -**
C-O-C Number	:	**39778**
Site	:	**- Not provided -**
Sampler	:	**ANTON DELAC**
E-mail	:	andrew_barwick@coffey.com.au
Telephone	:	(02)9911-1000
Facsimile	:	(02)9911-1001

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	ES20050089
Work order	:	**ES0505436**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	61-2-87848555
Facsimile	:	61-2-87848500

Dates

Date Samples Received	:	1 Jul 2005
SRA Issue Date	:	4 Jul 2005
Scheduled Reporting Date	:	**13 Jul 2005**

Delivery Details

Mode of Delivery	:	Carrier.	Temperature		: AMBIENT
No. of coolers/boxes	:	1 HARD	No. of samples	- Received	1
Security Seal	:	Intact.		- Analysed	1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Barbara Hanna.
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical quires to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0505436
Project	: E12723 4	**ALS Quote Reference**	: ES20050089

ALS Environmental

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be packages. A package may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EK055G Ammonia as N By Discrete Analyser	**EK057G** Nitrite as N by Discrete Analyser	**EK058G** Nitrate as N by Discrete Analyser	**EK061** Total Kjeldahl Nitrogen as N (TKN)	**EK067** Total Phosphorus as P	**W-02** 8 Metals	**W-07** TPH/BTEX/PAH			
ES0505436-001	**MW2 DUP1 - 29 Jul 2005**	●	●	●	●	●	●	●			
	Total(s) :	**1**	**1**	**1**	**1**	**1**	**1**	**1**			

Client	: COFFEY GEOSCIENCES PTY LTD	**Work Order**	: ES0505436
Project	: E12723 4	**ALS Quote Reference**	: ES20050089

ALS Environmental

Requested Reports

- **MR ANDREW BARWICK**
  - A4 - Certificate of Analysis - NEPM format — Email — andrew_barwick@coffey.com.au
  - A4 - Interpretive Quality Control Report - NEPM format — Email — andrew_barwick@coffey.com.au
  - A4 - Quality Control Report - NEPM format — Email — andrew_barwick@coffey.com.au
  - ENMRG Export Format — Email — andrew_barwick@coffey.com.au
  - A4 - Sample Receipt Notification - Comprehensive format — Email — andrew_barwick@coffey.com.au
  - Chain of Custody Acknowledgement — Email — andrew_barwick@coffey.com.au
  - Invoice — Email — andrew_barwick@coffey.com.au

Sample Container(s) / Preservation Non-Compliance Log

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

- **No sample container / preservation non-compliance exist.**

No: 39778

Chain of Custody

Laboratory Quotation / Order No:

Job No: E12723

Sheet 1 of 1

Coffey

Dispatch to: (Address & Phone No.) AMDEL LIMITED - CARDIFF OFFICE	Sampled by: ANTON DELAC	Consigning Officer: SYDNEY Date Dispatched: 30.6.2005
Attention: JULIE EDMOND	Project Manager: (report results to) ANDREW BARWICK.	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
ANTON DELAC	30.6.05	4.40		30/6/05	4.40
				30/6	5.10
			FAXED	1/7/5	6.30pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	TOTAL PHOSPHORUS	AMMONIA	NITRATE	NITRITE	TOTAL KJELDAHL NITROGEN							HOLD	Sample Condition on Receipt
	WATER	COMBINATION OF AMDEL AND ALS SAMPLING CONTAINERS WITH ICE - AS APPROVED BY JULIE EDMOND	MW1	29.6.05	/	/	/	/	/	/	/	/	/							/	
			2		/	/	/	/	/	/	/	/	/							/	
			3		/	/	/	/	/	/	/	/	/							/	
			4		/	/	/	/	/	/	/	/	/							/	
			5		/	/	/	/	/	/	/	/	/							/	
			11		/	/	/	/	/	/	/	/	/							/	
			12		/	/	/	/	/	/	/	/	/							/	
			13		/	/	/	/	/	/	/	/	/							/	
			14		/	/	/	/	/	/	/	/	/							/	
			DUP1		/	/	/	/	/	/	/	/	/							/	
			MW2 DUP1 (1)		/	/	/	/	/	/	/	/	/							/	
		40mL VIAL	TS1				/														
		" "	TB1				/														

ALS Environmental
Sydney
Work Order
ES0505436

Report Version: AliquotLabel 1.01

Telephone : 61-2-87848555

30 JUN 2005

52044

Special Laboratory Instructions: *PLEASE FORWARD ALL SAMPLE CONTAINERS MARKED WITH MW2 DUP1 TO ALS FOR INTERLABORATORY ANALYSIS.

Detection Limits:

Turnaround Required: FRIDAY 1ST JULY 2005 (AS PER JE)

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

20053/11-01

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

APPENDIX F2

QA/QC DATA VALIDATION REPORTS

PHASE 2 INVESTIGATION MARCH 2005

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA B SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID	CBH89	DUPB1	RPDs %	CBH89	DUPB2	RPDs %
Geological Origin	Fill	Amdel		Fill	ALS	
Date of Sampling	10-Mar-05	10-Mar-05		10-Mar-05	10-Mar-05	
Depth (m)	0.0-0.3			0.0-0.3		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<1	ND
Chromium	<5	<5	ND	<5	13	ND
Copper	10	9	10.5	10	15	40.0
Nickel	5	4	22.2	5	14	**94.7**
Lead	25	22	12.8	25	21	17.4
Zinc	84	75	11.3	84	76	10.0
Mercury	ND	ND	ND	ND	ND	ND
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	<10	<10	ND	<10	<50	ND
C15 - C28 Fraction	<50	<50	ND	<50	<100	ND
C29 - C36 Fraction	<50	<50	ND	<50	<100	ND
Total C10-C36	ND	ND	ND	ND	ND	ND
BTEX						
Benzene	-	<0.2	ND	-	<0.2	ND
Toluene	-	<1	ND	-	<0.2	ND
Ethylbenzene	-	<1	ND	-	<0.2	ND
m&p-Xylene	-	<2	ND	-	<0.2	ND
o-Xylene	-	<1	ND	-	<0.2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	NC
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	2.8	NC
Anthracene	<0.5	<0.5	ND	<0.5	0.6	NC
Fluoranthene	<0.5	<0.5	ND	<0.5	2	NC
Pyrene	<0.5	<0.5	ND	<0.5	2.5	NC
Benz(a)anthracene	<0.5	<0.5	ND	<0.5	1.1	NC
Chrysene	<0.5	<0.5	ND	<0.5	0.9	NC
Benzo(b)fluoranthene&Benzo(k)fluoranthene	<1	<1	ND	<1	1	NC
Benzo(a)pyrene	<0.5	<0.5	ND	<0.5	0.8	NC
Indeno(1.2.3.cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(g.h.i)perylene	<0.5	<0.5	ND	<0.5	0.5	NC
Total PAH	ND	ND	ND	ND	12.2	NC

NOTES:

RPD exceeds contol limit of 50%

\- Not analysed

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits
or vice versa. Also if both primary and duplicate samples were not detected

ND Not detected

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA B SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID	CBH85	DUPB9	RPDs %	CBH85	DUPB10	RPDs %
Geological Origin	Fill	Amdel		Fill	ALS	
Date of Sampling	16-Mar-05	16-Mar-05		16-Mar-05	16-Mar-05	
Depth (m)	0.15-0.25			0.15-0.25		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	-	ND
Cadmium	<0.5	<0.5	ND	<0.5	-	ND
Chromium	5	5	0.0	5	-	NC
Copper	18	13	32.3	18	-	NC
Nickel	7	6	15.4	7	-	NC
Lead	22	24	8.7	22	-	NC
Zinc	83	74	11.5	83	-	NC
Mercury	0.08	<0.05	NC	0.08	-	NC
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	<10	<10	ND	<10	<50	ND
C15 - C28 Fraction	<50	<50	ND	<50	<100	ND
C29 - C36 Fraction	<50	<50	ND	<50	<100	ND
Total C10-C36	ND	ND	ND	ND	ND	ND
BTEX						
Benzene	-	-	-	<0.2	<0.2	ND
Toluene	-	-	-	<1	<0.2	ND
Ethylbenzene	-	-	-	<1	<0.2	ND
m&p-Xylene	-	-	-	<2	<0.2	ND
o-Xylene	-	-	-	<1	<0.2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	-	-	-	<0.5	<0.5	ND
Acenaphthylene	-	-	-	<0.5	<0.5	ND
Acenaphthene	-	-	-	<0.5	<0.5	ND
Fluorene	-	-	-	<0.5	<0.5	ND
Phenanthrene	-	-	-	<0.5	<0.5	ND
Anthracene	-	-	-	<0.5	<0.5	ND
Fluoranthene	-	-	-	<0.5	<0.5	ND
Pyrene	-	-	-	<0.5	<0.5	ND
Benz(a)anthracene	-	-	-	<0.5	<0.5	ND
Chrysene	-	-	-	<0.5	<0.5	ND
Benzo(b)fluoranthene&Benzo(k)fluoranthene	-	-	-	<1	<0.5	ND
Benzo(a)pyrene	-	-	-	<0.5	<0.5	ND
Indeno(1.2.3.cd)pyrene	-	-	-	<0.5	<0.5	ND
Dibenz(a.h)anthracene	-	-	-	<0.5	<0.5	ND
Benzo(g.h.i)perylene	-	-	-	<0.5	<0.5	ND
Total PAH	-	-	-	ND	ND	ND

NOTES:

RPD exceeds contol limit of 50%

\- Not analysed

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits
or vice versa. Also if both primary and duplicate samples were not detected

ND Not detected

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA B SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID	CBH92	DUPB11	RPDs %	CBH92	DUPB12	RPDs %
Geological Origin	FILL	Amdel		FILL	ALS	
Date of Sampling	17-Mar-05	17-Mar-05		17-Mar-05	17-Mar-05	
Depth (m)	0.0-0.1			0.0-0.1		
HEAVY METALS						
Arsenic	6	<5	NC	6	-	NC
Cadmium	<0.5	<0.5	ND	<0.5	-	ND
Chromium	<5	<5	ND	<5	-	ND
Copper	9	7	25.0	9	-	NC
Nickel	3	3	0.0	3	-	NC
Lead	5	<5	NC	5	-	NC
Zinc	24	6	120.0	24	-	NC
Mercury	<0.05	<0.05	ND	<0.05	-	ND
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	10	10	0.0	10	<50	NC
C15 - C28 Fraction	<50	70	NC	<50	<100	ND
C29 - C36 Fraction	<50	<50	ND	<50	<100	ND
Total C10-C36	10	80	155.6	10	ND	NC
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<0.2	ND
Ethylbenzene	<1	<1	ND	<1	<0.2	ND
m&p-Xylene	<2	<2	ND	<2	<0.2	ND
o-Xylene	<1	<1	ND	<1	<0.2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	0.5	<0.5	ND	0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benz(a)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Chrysene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(b)fluoranthene&Benzo(k)fluoranthene	<1	<1	ND	<1	<1	ND
Benzo(a)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Indeno(1.2.3.cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(g.h.i)perylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Total PAH	0.5	ND	NC	0.5	ND	NC

NOTES:

RPD exceeds contol limit of 50%

\- Not analysed

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits
or vice versa. Also if both primary and duplicate samples were not detected

ND Not detected

E12723/4 - AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA B SOIL
RESULTS OF TRIP BALNK, TRIP SPIKE & WASH BLANK ANALYSIS
All results in µg/L

Sample ID	TS	TB	TS	TB 11.3.05	TS B 17	TB B 17	WB B 17	WBA2
Date of Sampling	10-Mar-05	10-Mar-05	11-Mar-05	11-Mar-05	17-Mar-05	17-Mar-05	17-Mar-05	24-Mar-05
Depth (m)								
HEAVY METALS								
Arsenic	-	<1	-	<1	-	-	1	1
Cadmium	-	<0.1	-	<0.1	-	-	<0.1	<0.1
Chromium	-	<1	-	<1	-	-	<1	<1
Copper	-	<1	-	<1	-	-	3	1
Nickel	-	<1	-	<1	-	-	1	<1
Lead	-	<1	-	<1	-	-	<1	9
Zinc	-	<2	-	<2	-	-	4	11
Mercury	-	<1	-	<1	-	-	<1	<1
TOTAL PETROLEUM HYDROCARBONS								
C6 - C9 Fraction	-	<20	-	<20	-	-	<20	<20
C10 - C14 Fraction	-	<20	-	<20	-	-	<20	<20
C15 - C28 Fraction	-	<100	-	<100	-	-	<100	<100
C29 - C36 Fraction	-	<100	-	<100	-	-	<100	<100
Total C10-C36	-	ND	-	ND	-	-	ND	ND
BTEX								
Benzene	9.4	<0.5	10	<0.5	10	<0.5	<0.5	<0.5
Toluene	9	<1	9	<1	9	<1	<1	<1
Ethylbenzene	8	<1	9	<1	9	<1	<1	<1
m&p-Xylene	18	<2	19	<2	18	<2	<2	<2
o-Xylene	9	<1	10	<1	9	<1	<1	<1
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene	-	<1	-	<1	-	-	<1	<1
Acenaphthylene	-	<1	-	<1	-	-	<1	<1
Acenaphthene	-	<1	-	<1	-	-	<1	<1
Fluorene	-	<1	-	<1	-	-	<1	<1
Phenanthrene	-	<1	-	<1	-	-	<1	<1
Anthracene	-	<1	-	<1	-	-	<1	<1
Fluoranthene	-	<1	-	<1	-	-	<1	<1
Pyrene	-	<1	-	<1	-	-	<1	<1
Benz(a)anthracene	-	<1	-	<1	-	-	<1	<1
Chrysene	-	<1	-	<1	-	-	<1	<1
Benzo(b)&(k)fluoranthene	-	<2	-	<2	-	-	<2	<2
Benzo(a)pyrene	-	<1	-	<1	-	-	<1	<1
Indeno(1.2.3.cd)pyrene	-	<1	-	<1	-	-	<1	<1
Dibenz(a.h)anthracene	-	<1	-	<1	-	-	<1	<1
Benzo(g.h.i)perylene	-	<1	-	<1	-	-	<1	<1
Total PAH	-	ND	-	ND	-	-	ND	ND

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID_Depth(m)	CBH116	DUPD2	RPDs %	CBH116	ALS CBH116	RPDs %
Geological Origin	Fill			Fill	Fill	
Date of Sampling	10-Mar-05	10-Mar-05		10-Mar-05	10-Mar-05	
Depth (m)	0.0-0.2			0.0-0.2	0.0-0.2	
HEAVY METALS						
Arsenic	6	6	0	6	6	0
Cadmium	<0.5	<0.5	ND	<0.5	<1	ND
Chromium	7	8	13	7	9	25
Copper	13	13	0	13	15	14
Nickel	<2	<2	ND	<2	<2	ND
Lead	61	64	5	61	69	12
Zinc	52	54	4	52	59	13
Mercury	0.09	0.08	12	0.09	0.1	11
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	<10	<10	ND	<10	<50	ND
C15 - C28 Fraction	<50	<50	ND	<50	<100	ND
C29 - C36 Fraction	<50	<50	ND	<50	<100	ND
Total C10-C36	ND	ND	ND	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<0.2	ND
Ethylbenzene	<1	<1	ND	<1	<0.2	ND
Total Xylene	<3	<3	ND	<3	<0.2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	0.8	0.5	46	0.8	<0.5	NC
Pyrene	1	0.6	50	1	<0.5	NC
Benz(a)anthracene	0.5	<0.5	NC	0.5	<0.5	NC
Chrysene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(b)&(k)fluoranthene	<1	<1	ND	<1	0.6	NC
Benzo(a)pyrene	0.6	<0.5	NC	0.6	<0.5	NC
Indeno(1.2.3.cd)pyrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(g.h.i)perylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Total PAH	2.1	1.1	63	2.1	0.6	111

RPD exceeds contol limit of 50% (providing both primary and duplicate samples are not less than 5 times LOR)

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected and duplicate sample was below 5 times the LOR or vice

- Not Analysed

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID_Depth(m)	DUPD4	ALS DUPD4	RPDs %	CBH133	DUP1D	RPDs %
Geological Origin				Fill		
Date of Sampling	11-Mar-05	11-Mar-05		14-Mar-05	14-Mar-05	
Depth (m)				0.0-0.2		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<1	ND	<0.5	<0.5	ND
Chromium	6	6	0	<5	6	NC
Copper	37	33	11	27	32	17
Nickel	5	7	33	12	15	22
Lead	58	222	117	16	18	12
Zinc	120	143	17	25	29	15
Mercury	0.07	<0.1	NC	<0.05	<0.05	ND
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<2	ND	<5	<5	ND
C10 - C14 Fraction	<10	<50	ND	<10	<10	ND
C15 - C28 Fraction	<50	<100	ND	<50	<50	ND
C29 - C36 Fraction	<50	<100	ND	<50	<50	ND
Total C10-C36	ND	ND	ND	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<0.2	ND	<1	<1	ND
Ethylbenzene	<1	<0.2	ND	<1	<1	ND
Total Xylene	<3	<0.2	ND	<3	<3	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	0.8	NC	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	0.8	1.3	48	<0.5	<0.5	ND
Pyrene	1	1.5	40	<0.5	<0.5	ND
Benz(a)anthracene	<0.5	1.1	NC	<0.5	<0.5	ND
Chrysene	0.5	0.8	46	<0.5	<0.5	ND
Benzo(b)&(k)fluoranthene	<1	1.3	NC	<1	<1	ND
Benzo(a)pyrene	0.5	1	67	<0.5	<0.5	ND
Indeno(1.2.3.cd)pyrene	<0.5	0.5	NC	<0.5	<0.5	ND
Dibenz(a.h)anthracene	<0.5	<0.5	NC	<0.5	<0.5	ND
Benzo(g.h.i)perylene	<0.5	0.7	ND	<0.5	<0.5	ND
Total PAH	2.8	9	105	ND	ND	ND

RPD exceeds contol limit of 50% (providing both primary and duplicate samples are not less than 5 times LOR)

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected *and duplicate sample was* below 5 times the LOR or vice

\- Not Analysed

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID_Depth(m)	CBH137	DUPD5	RPDs %	CBH102	DUPD8	RPDs %
Geological Origin	Fill			Fill		
Date of Sampling	15-Mar-05	15-Mar-05		21-Mar-05	21-Mar-05	
Depth (m)	0.0-0.2			0.0-0.2		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<0.5	ND
Chromium	<5	<5	ND	10	10	0
Copper	8	8	0	16	15	6
Nickel	4	3	29	10	8	22
Lead	18	19	5	34	31	9
Zinc	19	19	0	71	69	3
Mercury	<0.05	<0.05	ND	0.3	0.27	11
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<5	ND
C10 - C14 Fraction	<10	<10	ND	<10	<10	ND
C15 - C28 Fraction	<50	80	NC	<50	<50	ND
C29 - C36 Fraction	<50	<50	ND	<50	<50	ND
Total C10-C36	ND	80	NC	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<1	ND
Ethylbenzene	<1	<1	ND	<1	<1	ND
Total Xylene	<3	<3	ND	<3	<3	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	<0.5	ND
Anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluoranthene	0.8	1	22	<0.5	<0.5	ND
Pyrene	0.9	1	11	<0.5	<0.5	ND
Benz(a)anthracene	0.7	0.7	0	<0.5	<0.5	ND
Chrysene	0.6	0.7	15	<0.5	<0.5	ND
Benzo(b)&(k)fluoranthene	1	1	0	<1	<1	ND
Benzo(a)pyrene	0.7	0.9	25	<0.5	<0.5	ND
Indeno(1.2.3.cd)pyrene	0.6	0.8	29	<0.5	<0.5	ND
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(g.h.i)perylene	0.6	0.6	0	<0.5	<0.5	ND
Total PAH	5.9	6.7	13	ND	ND	ND

RPD exceeds contol limit of 50% (providing both primary and duplicate samples are not less than 5 times LOR)

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected and duplicate sample was below 5 times the LOR or vi

\- Not Analysed

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID_Depth(m)	CTP2	DUP D13	RPDs %	CTP2	DUP D14	RPDs %
Geological Origin	Fill			Fill		
Date of Sampling	22-Mar-05	22-Mar-05		22-Mar-05	22-Mar-05	
Depth (m)	3.0-3.2			3.0-3.2		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<1	ND
Chromium	8	10	22	8	5	46
Copper	29	30	3	29	28	4
Nickel	7	8	13	7	6	15
Lead	84	86	2	84	79	6
Zinc	140	170	19	140	148	6
Mercury	0.41	0.21	65	0.41	0.4	2
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	<10	<10	ND	<10	<50	ND
C15 - C28 Fraction	<50	60	ND	<50	<100	ND
C29 - C36 Fraction	<50	<50	ND	<50	<100	ND
Total C10-C36	ND	60	NC	ND	ND	ND
BTEX						
Benzene	<0.2	<0.2	ND	<0.2	<0.2	ND
Toluene	<1	<1	ND	<1	<0.2	ND
Ethylbenzene	<1	<1	ND	<1	<0.2	ND
Total Xylene	<3	<3	ND	<3	<0.2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	<0.5	ND
Acenaphthylene	<0.5	<0.5	ND	<0.5	0.5	NC
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	0.6	ND	<0.5	0.8	ND
Anthracene	<0.5	<0.5	ND	<0.5	0.5	ND
Fluoranthene	0.8	1.4	55	0.8	1.8	77
Pyrene	1	1.6	46	1	2.2	75
Benz(a)anthracene	0.5	0.8	46	0.5	1.1	75
Chrysene	0.5	0.7	33	0.5	1.2	82
Benzo(b)&(k)fluoranthene	1	1	0	1	2.2	75
Benzo(a)pyrene	0.7	1	35	0.7	1.2	53
Indeno(1.2.3.cd)pyrene	0.5	0.7	33	0.5	0.6	18
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	<0.5	ND
Benzo(g.h.i)perylene	0.5	0.6	18	0.5	0.9	57
Total PAH	5.5	8.4	42	5.5	13	81

RPD exceeds contol limit of 50% (providing both primary and duplicate samples are not less than 5 times LOR)

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected and duplicate sample was below 5 times the LOR or vi

\- Not Analysed

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in mg/kg

Sample ID_Depth(m)	CTP13	DUP D17	RPDs %	CTP13	DUP D18	RPDs %
Geological Origin	Fill			Fill		
Date of Sampling	24-Mar-05	24-Mar-05		24-Mar-05	24-Mar-05	
Depth (m)	0.4-0.6			0.4-0.6		
HEAVY METALS						
Arsenic	<5	<5	ND	<5	<5	ND
Cadmium	<0.5	<0.5	ND	<0.5	<1	ND
Chromium	8	7	13	8	7	13
Copper	18	11	48	18	15	18
Nickel	7	6	15	7	6	15
Lead	79	68	15	79	114	36
Zinc	160	160	0	160	228	35
Mercury	0.06	0.06	0	0.06	<0.1	NC
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<5	<5	ND	<5	<2	ND
C10 - C14 Fraction	10	10	0	10	<50	NC
C15 - C28 Fraction	90	70	25	90	280	103
C29 - C36 Fraction	50	<50	NC	50	290	141
Total C10-C36	150	80	61	150	570	117
BTEX						
Benzene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-
Total Xylene	-	-	-	-	-	-
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.5	<0.5	ND	<0.5	0.5	NC
Acenaphthylene	<0.5	<0.5	ND	<0.5	3	NC
Acenaphthene	<0.5	<0.5	ND	<0.5	<0.5	ND
Fluorene	<0.5	<0.5	ND	<0.5	<0.5	ND
Phenanthrene	<0.5	<0.5	ND	<0.5	4.8	NC
Anthracene	<0.5	<0.5	ND	<0.5	2.7	NC
Fluoranthene	1	0.6	50	1	23.1	183
Pyrene	1.2	<0.5	NC	1.2	24.9	182
Benz(a)anthracene	0.5	<0.5	NC	0.5	11.4	183
Chrysene	0.5	<0.5	NC	0.5	10	181
Benzo(b)&(k)fluoranthene	1	<1	NC	1	17.6	178
Benzo(a)pyrene	0.6	<0.5	NC	0.6	10.7	179
Indeno(1.2.3.cd)pyrene	<0.5	<0.5	ND	<0.5	5.7	NC
Dibenz(a.h)anthracene	<0.5	<0.5	ND	<0.5	1.4	NC
Benzo(g.h.i)perylene	<0.5	<0.5	ND	<0.5	7.3	NC
Total PAH	4.8	0.6	156	4.8	123.1	185

RPD exceeds contol limit of 50% (providing both primary and duplicate samples are not less than 5 times LOR)

ND Both primary and duplicate samples were not detected

NC RPD not calculated as primary sample was not detected and duplicate sample was below 5 times the LOR or vice versa

\- Not Analysed

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF TRIP BALNK, TRIP SPIKE & WASH BLANK ANALYSIS
All results in µg/L

Sample ID	TS	TB	TS	TS	WB 11.3.05	TB 11.3.05	WB21/3
Laboratory Description	TS 050310 0.10		TS 050310 0.20				
Date of Sampling	10/03/2005	10/03/2005	10/03/2005	11/03/2005	11/03/2005	11/03/2005	21/03/2005
Depth (m)							
HEAVY METALS							
Arsenic	-	-	-	-	ND	-	ND
Cadmium	-	-	-	-	ND	-	ND
Chromium	-	-	-	-	ND	-	ND
Copper	-	-	-	-	ND	-	5
Nickel	-	-	-	-	ND	-	ND
Lead	-	-	-	-	ND	-	3
Zinc	-	-	-	-	30	-	230
Mercury	-	-	-	-	ND	-	ND
TOTAL PETROLEUM HYDROCARBONS							
C6 - C9 Fraction	-	-	-	-	ND	-	ND
C10 - C14 Fraction	-	-	-	-	ND	-	ND
C15 - C28 Fraction	-	-	-	-	ND	-	ND
C29 - C36 Fraction	-	-	-	-	ND	-	ND
Total C10-C36	-	-	-	-	ND	-	ND
BTEX							
Benzene	12	ND	11	11	ND	ND	ND
Toluene	12	ND	10	11	ND	ND	ND
Ethylbenzene	11	ND	9	10	ND	ND	ND
m&p-Xylene	24	ND	21	21	ND	ND	ND
o-Xylene	12	ND	10	11	ND	ND	ND
POLYCYCLIC AROMATIC HYDROCARBONS							
Naphthalene	-	-	-	-	ND	-	ND
Acenaphthylene	-	-	-	-	ND	-	ND
Acenaphthene	-	-	-	-	ND	-	ND
Fluorene	-	-	-	-	ND	-	ND
Phenanthrene	-	-	-	-	ND	-	ND
Anthracene	-	-	-	-	ND	-	ND
Fluoranthene	-	-	-	-	ND	-	ND
Pyrene	-	-	-	-	ND	-	ND
Benz(a)anthracene	-	-	-	-	ND	-	ND
Chrysene	-	-	-	-	ND	-	ND
Benzo(b)fluoranthene&Benzo(k)fluoranthene	-	-	-	-	ND	-	ND
Benzo(a)pyrene	-	-	-	-	ND	-	ND
Indeno(1.2.3.cd)pyrene	-	-	-	-	ND	-	ND
Dibenz(a.h)anthracene	-	-	-	-	ND	-	ND
Benzo(g.h.i)perylene	-	-	-	-	ND	-	ND
Total PAH	-	-	-	-	ND	-	ND

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D SOIL
RESULTS OF TRIP BALNK, TRIP SPIKE & WASH BLANK ANALYSIS
All results in µg/L

Sample ID	TRIP BLANK	TS 050318.04
Laboratory Description	SEO831	
Date of Sampling	21/03/2005	18/03/2005
Depth (m)		
HEAVY METALS		
Arsenic	-	-
Cadmium	-	-
Chromium	-	-
Copper	-	-
Nickel	-	-
Lead	-	-
Zinc	-	-
Mercury	-	-
TOTAL PETROLEUM HYDROCARBONS		
C6 - C9 Fraction	ND	-
C10 - C14 Fraction	ND	-
C15 - C28 Fraction	ND	-
C29 - C36 Fraction	ND	-
Total C10-C36	ND	-
BTEX		
Benzene	-	2.6
Toluene	-	3
Ethylbenzene	-	2
m&p-Xylene	-	5
o-Xylene	-	2
POLYCYCLIC AROMATIC HYDROCARBONS		
Naphthalene	-	-
Acenaphthylene	-	-
Acenaphthene	-	-
Fluorene	-	-
Phenanthrene	-	-
Anthracene	-	-
Fluoranthene	-	-
Pyrene	-	-
Benz(a)anthracene	-	-
Chrysene	-	-
Benzo(b)fluoranthene&Benzo(k)fluoranthene	-	-
Benzo(a)pyrene	-	-
Indeno(1.2.3.cd)pyrene	-	-
Dibenz(a.h)anthracene	-	-
Benzo(g.h.i)perylene	-	-
Total PAH	-	-

E12723/4 - AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA B GROUNDWATER
RESULTS OF DUPLICATE ANALYSIS
ALL LABORATORY BATCHES
All results in µg/L

Sample ID	MW7	DUP2	RPDs %	MW7	DUP2	RPDs %
Geological Origin	WATER	WATER		WATER	WATER	
Date of Sampling	23/03/2005	23/03/2005		23/03/2005	23/03/2005	
Depth (m)					ALS	
HEAVY METALS						
Arsenic	8	7	13	8	10	22
Cadmium	1	0.9	11	1	1	0
Chromium	1	1	0	1	1	0
Copper	<1	ND	ND	<1	8	NC
Nickel	18	19	5	18	29	47
Lead	26	24	8	26	30	14
Zinc	38	53	33	38	54	35
Mercury	<1	<1	ND	<1	<0.1	ND
TOTAL PETROLEUM HYDROCARBONS						
C6 - C9 Fraction	<20	20	NC	<20	<20	ND
C10 - C14 Fraction	<20	<20	ND	<20	<50	ND
C15 - C28 Fraction	<100	<100	ND	<100	200	NC
C29 - C36 Fraction	<100	<100	ND	<100	100	NC
Total C10-C36	ND	20	NC	ND	300	NC
BTEX						
Benzene	<0.5	<0.5	ND	<0.5	<1	ND
Toluene	<1	<1	ND	<1	<2	ND
Ethylbenzene	<1	<1	ND	<1	<2	ND
m&p-Xylene	<2	<2	ND	<2	<2	ND
o-Xylene	<1	<1	ND	<1	<2	ND
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<1	<1	ND	<1	<1	ND
Acenaphthylene	<1	<1	ND	<1	<1	ND
Acenaphthene	<1	<1	ND	<1	<1	ND
Fluorene	<1	<1	ND	<1	1.4	NC
Phenanthrene	<1	<1	ND	<1	7.8	NC
Anthracene	<1	<1	ND	<1	1.8	NC
Fluoranthene	<1	<1	ND	<1	4	NC
Pyrene	<1	<1	ND	<1	3.2	NC
Benz(a)anthracene	<1	<1	ND	<1	<1	ND
Chrysene	<1	<1	ND	<1	<1	ND
Benzo(b)fluoranthene&Benzo(k)fluoranthene	<2	<2	ND	<2	<1	ND
Benzo(a)pyrene	<1	<1	ND	<1	0.7	NC
Indeno(1.2.3.cd)pyrene	<1	<1	ND	<1	<1	ND
Dibenz(a.h)anthracene	<1	<1	ND	<1	<1	ND
Benzo(g.h.i)perylene	<1	<1	ND	<1	<1	ND
Total PAH	<1	<1	ND	<1	18.9	NC

NOTES:

RPD exceeds contol limit of 50%

\- Not analysed

NC RPD not calculated as primary sample was not detected,
while the duplicate sample produced values above detection limits
or vice versa. Also if both primary and duplicate samples were not detected

ND Not detected

E12723/4- AQ
19/04/2005

QA/QC OF LABORATORY RESULTS
PHASE 2 ESA - AREA D GROUNDWATER
All results in µg/L

Sample ID	MW5	DUP1	RPDs %
Geological Origin	WATER	WATER	
Date of Sampling	22/03/2005	22/03/2005	
Depth (m)			
HEAVY METALS			
Arsenic	4	6	40
Cadmium	<0.5	<0.5	NC
Chromium	<5	<5	NC
Copper	<5	<5	NC
Nickel	<5	<5	NC
Lead	2	<2	NC
Zinc	<10	<10	NC
Mercury	<1	<1	NC
TOTAL PETROLEUM HYDROCARBONS			
C6 - C9 Fraction	<20	<20	NC
C10 - C14 Fraction	<20	<20	NC
C15 - C28 Fraction	<100	<100	NC
C29 - C36 Fraction	<100	<100	NC
Total C10-C36	ND	ND	NC
BTEX			
Benzene	<0.5	<0.5	NC
Toluene	<1	<1	NC
Ethylbenzene	<1	<1	NC
m&p-Xylene	<2	<2	NC
o-Xylene	<1	<1	NC
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<1	<1	NC
Acenaphthylene	<1	<1	NC
Acenaphthene	<1	<1	NC
Fluorene	<1	<1	NC
Phenanthrene	<1	<1	NC
Anthracene	<1	<1	NC
Fluoranthene	<1	<1	NC
Pyrene	<1	<1	NC
Benz(a)anthracene	<1	<1	NC
Chrysene	<1	<1	NC
Benzo(b)fluoranthene&Benzo(k)fluoranthene	<2	<2	NC
Benzo(a)pyrene	<1	<1	NC
Indeno(1.2.3.cd)pyrene	<1	<1	NC
Dibenz(a.h)anthracene	<1	<1	NC
Benzo(g.h.i)perylene	<1	<1	NC
Total PAH	<1	<1	NC
NITROGEN COMPOUNDS			
Ammonia as N (mg/L)	0.06	0.04	40
Nitrite as N (mg/L)	<0.02	<0.02	NC
Nitrate as N (mg/L)	3.46	3.17	9
Total Nitrogen (mg/L)	5.4	4.4	20
Total Kjeldahl as N (mg/L)	2	1.4	35
TOTAL PHOSPHORUS			
Total Phosphorus	0.02	0.03	40

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0951

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 11; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Inter-Laboratory Field Duplicates	1	0
Trip Blanks	0	1
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

The RPD% for nickel for interlaboratory duplicate DUPB2 of 94% was considered to be due to heterogeneities in the sample. Given the low concentrations of nickel, this would not impact the overall useability of the laboratory data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks have been collected with other batches during the field investigations which certify the integrity of soil sampling and the SPT decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs	OCP/OPP
Laboratory Blanks/Reagent Blanks	1	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2	0	0
Surrogates	0	1	3	3	1

1b. Type and Number of QA/QC Samples (Water)

	Total Metals	TPH/BTEX	PAH
Laboratory Blanks/Reagent Blanks	1	1	1
Matrix Spikes/Matrix Spike Duplicates	0	0	0
Laboratory Control Samples / Duplicates	1	1	1
Laboratory Duplicates	0	0	0
Surrogates	0	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the RPD% exceedence for DUPB2 and the absence of a WB from this batch will not impact the useability of data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0952, 5E0952A

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

Job Number: E12723/04 Laboratory batch: Amdel 5E0952, 5E0952A

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 9; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Inter-Laboratory Field Duplicates	1	0
Trip Blanks	0	2
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☐	☒
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

The RPDs for total PAHs exceed the control limits with values of 63% (intra-lab) and 111% (inter-lab). These exceedences were not considered to impact the overall useability of laboratory data as: the RPD only just exceeded the 50% control limit for the intra-lab sample; the concentrations detected in the primary and duplicate samples were only 4-5 times the LOR; the sampled material was heterogeneous fill and some variation of concentrations is anticipated.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

A wash blank was not collected with this batch, however wash blanks have been collected with other batches (5E0960) during the field investigations which certify the integrity of soil sampling and the SPT decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	OCPs	VOCs
Laboratory Blanks/Reagent Blanks	3	2	2	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	3	2	2	1	2
Laboratory Duplicates	2	2	2	0	0
Surrogates	0	2	6	1	6

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, exceedences of the field duplicate RPD% for total PAH in batch 5E0952 and the absence of a wash blank from the batch was not considered to impact the overall useability of laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0959, 5E0982

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☐	☒
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

The sample labelled WB was not analysed as requested. This error was discovered after the sample's holding times had been exceeded for the majority of requested analytes hence an additional request for analysis was not made to the laboratory. A number of wash blanks were carried out in other batches during the field investigation hence this error was not considered to affect the overall usability of laboratory data.

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)*
   Soil: 8
   Water: 0
   Other: 3 (asbestos fragments)

2. Number of Days of Sampling:
   Soil: 1
   Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	0
Inter-Laboratory Field Duplicates	0	0
Trip Blanks	0	1
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?	☐	☒
B. Were RPDs within Control Limits? a. Organics (± 50%) b. Metals/Inorganics (± 50%) c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

No duplicates were analysed in these batches as the samples were collected at the same time as batch 5e0951 which contains a sufficient number of duplicates to certify the reproducibility of field sampling methods and the quality of laboratory analysis.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Wash blanks were collected with other batches during the field investigations which certify the integrity of soil sampling and the SPT decontamination procedures. Hence the absence of a wash blank from these batches was not considered to impact the overall useability of the laboratory data.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1
Laboratory Control Samples / Duplicates	1	1	1	1
Laboratory Duplicates	2	2	2	0
Surrogates	0	1	3	3

1b. Type and Number of QA/QC Samples (Water)

	Total Metals	TPH/BTEX	PAH
Laboratory Blanks/Reagent Blanks	1	1	1
Matrix Spikes/Matrix Spike Duplicates	0	0	0
Laboratory Control Samples / Duplicates	1	1	1
Laboratory Duplicates	0	0	0
Surrogates	0	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of duplicates and a wash blank has been compensated in other batches from the field investigation and will not impact the useability of data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: AMDEL 5E0960

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 18; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Inter-Laboratory Field Duplicates	1	0
Trip Blanks	0	1
Wash Blanks	0	1
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

RPD% exceeds control limits for lead (117%), benzo(a)pyrene (67%) and Total PAH (105%). These exceedences were not considered to impact the overall useability of laboratory data as: the RPD for benzo(a)pyrene only just exceeded the 50% control limit for the intra-lab sample; the concentrations detected in the duplicate samples were only 2-3 times the LOR for the PAH compounds; the sampled material was heterogeneous fill and some variation of concentrations is anticipated.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

COMMENTS:

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	TPH/BTEX	Metals	PAHs	OCPs	VOCs
Laboratory Blanks/Reagent Blanks	2	2	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	1	2	1	1	1
Laboratory Duplicates	2	2	2	0	0
Surrogates	1	0	3	1	3

1b. Type and Number of QA/QC Samples (Water)

	TPH/BTEX	Metals	PAHs
Laboratory Blanks/Reagent Blanks	1	1	1
Matrix Spikes/Matrix Spike Duplicates	0	0	0
Laboratory Control Samples / Duplicates	1	1	1
Laboratory Duplicates	0	0	0
Surrogates	1	0	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, three exceedences of the field duplicate RPD% was not considered to impact the overall useability of laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0984 & 5E0984A

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☐	☒
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

The laboratory did not analyse one sample for VOCs and analysed an additional sample for BTEX and PAHs. This does not affect the useability of the data nor compromise the sampling analysis plan.

Precision/Accuracy of the Laboratory Report:

- ☐ **Satisfactory**
- ☒ **Partially Satisfactory**
- ☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 10; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Trip blanks and wash blanks were collected in batches 5E0952 and 5E0960 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Trip spikes were collected in batches 5E0952 and 5E0960 during the same phase of the field investigation to certify the integrity of sampling, packaging and transport to the analytical laboratory.

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	OPs	VOCs
Laboratory Blanks/Reagent Blanks	1	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2	0	0
Surrogates	0	1	3	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☐	☒	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of a trip spike, trip blank and wash blank from these batches was not considered to impact the overall useability of laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0998

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☐	☒
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

The laboratory analysed sample CBH139 1.7-1.9 instead of sample CBH139 0.0-0.2. This is not expected to affect the

useability of the data or compromise the sampling analysis plan.

Precision/Accuracy of the Laboratory Report:

- ☐ **Satisfactory**
- ☒ **Partially Satisfactory**
- ☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 15; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	☒	☐

COMMENTS:

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	☐	☒
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Trip blanks and wash blanks were collected in batches 5E0952 and 5E0960 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Trip spikes were collected in batches 5E0952 and 5E0960 during the same phase of the field investigation to certify the integrity of sampling, packaging and transport to the analytical laboratory.

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	OCPs	VOCs
Laboratory Blanks/Reagent Blanks	1	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	2	1	1	1	1
Laboratory Duplicates	2	2	2	0	0
Surrogates	0	1	3	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☐	☒

COMMENTS:

The surrogate for BTEX in sample CBH136: 1.0-1.4 was above the control limits with a value of 60%, however this was not considered to impact the useability of laboratory data as the value only slightly exceeded the 50% limit and other surrogate RPD% were within control limits.

The laboratory internal QA / QC was: ☐ **Satisfactory**

☐ **Partially Satisfactory**

☒ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☐	☒	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☐	☒	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

The laboratory analysed sample CBH139 1.7-1.9 instead of sample CBH139 0.0-0.2. This is not expected to affect the

useability of the data nor compromise the sampling analysis plan.

The surrogate for BTEX at CBH136 1.0-1.4 was below the control limits with a value of 60%, however this was an isolated exceedence.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E0999

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 13; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	0
Inter-Laboratory Field Duplicates	0	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?	☐	☒
B. Were RPDs within Control Limits? a. Organics (± 50%) b. Metals/Inorganics (± 50%) c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

No duplicates were analysed in these batches as the samples were collected at the same time as batch 5E1018 which contains a sufficient number of duplicates to certify the reproducibility of field sampling methods and the quality of laboratory analysis for batch 5E0999.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

A wash blank was collected in batch 5E1051 during the same phase of the field investigations as batch 5E0999 to certify the integrity of soil sampling and the SPT decontamination procedures. Hence the absence of a wash blank from this batch was not considered to impact the overall useability of the laboratory data.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	N/A	N/A
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1
Laboratory Control Samples / Duplicates	1	1	1	1
Laboratory Duplicates	2	2	2	0
Surrogates	0	1	3	3

1b. Type and Number of QA/QC Samples (Water)

	Total Metals	TPH/BTEX	PAH
Laboratory Blanks/Reagent Blanks	1	1	1
Matrix Spikes/Matrix Spike Duplicates	0	0	0
Laboratory Control Samples / Duplicates	1	1	1
Laboratory Duplicates	0	0	0
Surrogates	0	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of duplicates, trip spikes/blanks and a wash blank from this batch is compensated in batches 5E1018 and 5E1051 which was sampled during the same period of the field investigations hence will not impact the useability of data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1018

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

- ☐ **Satisfactory**
- ☒ **Partially Satisfactory**
- ☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 24; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Inter-Laboratory Field Duplicates	1	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☐	☒
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	N/A	N/A
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

A wash blank was collected in batch 5E1051 during the same phase of the field investigations as batch 5E1018 to certify the integrity of soil sampling and the SPT decontamination procedures. Hence the absence of a wash blank from this batch was not considered to impact the overall useability of the laboratory data.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	N/A	N/A
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Although no trip spikes/blanks were collected in this batch they were collected in batch 5E1051 during the same phase of the field investigations to assess the integrity of sample packaging and transport to the laboratory and the potential loss of volatiles. This results of the trip spikes/blanks from that batch indicated that sample integrity was maintained from the dispatch of the sample from Coffey to analysis at the analytical laboratory.

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1 Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs	OC/OP
Laboratory Blanks/Reagent Blanks	1	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1	-
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	1	1	1	
Surrogates	-	1	3	3	2

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, although a wash blank and trip spikes/blanks was not collected in this batch they were collected in batch 5E1051 during the same phase of the field investigations to certify the integrity of sample packaging and transport and the SPT decontamination procedures. Hence the absence of a wash blank and trip spike/blank was not considered to impact the overall useability of the laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1019

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 7; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?	☐	☒
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	N/A	N/A
b. Metals/Inorganics (± 50%)	N/A	N/A
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Field duplicates collected in batch 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	☐	☒
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Trip blanks and wash blanks were collected in batches 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Trip spikes were collected in batches 5E1100 during the same phase of the field investigation to certify the integrity of sampling, packaging and transport to the analytical laboratory.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs
Laboratory Blanks/Reagent Blanks	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1
Laboratory Control Samples / Duplicates	1	1	1	1
Laboratory Duplicates	2	1	2	-
Surrogates	-	1	3	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☐
2. Data Usable with the following corrections/modifications (see comment below) ☒
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of a field duplicate, trip spike, trip blank and wash blank from this batch was not considered to impact the overall useability of laboratory data as a sufficient number were collected in other batches during the same phase of the field investigations.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1051

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 6; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Inter-Laboratory Field Duplicates	1	0
Trip Blanks	0	1
Wash Blanks	0	1
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☐	☒
b. Metals/Inorganics (± 50%)	☐	☒
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

The RPD% for sample DUPB11 for zinc (120%) and Total TPH (155%) exceeded the 50% control limits. These exceedences are considered to be due to the heterogeneity of the fill material sampled and since the other RPD are within control limits the exceedences will not significantly impact on the overall useability of laboratory data.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☐	☒

COMMENTS:

Low concentrations of metals arsenic, copper, nickel and zinc (1-4 ug/L) were detected in the wash blank. These detections are likely to be related to background concentrations present in the laboratory provided rinsate water.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs	OC/OP
Laboratory Blanks/Reagent Blanks	1	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1	-
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2	-	-
Surrogates	-	1	3	3	-

1b. Type and Number of QA/QC Samples (Water)

	Total Metals	TPH/BTEX	PAH	OC
Laboratory Blanks/Reagent Blanks	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	-	-	-	-
Laboratory Control Samples / Duplicates	1	1	1	2
Laboratory Duplicates	-	-	-	-
Surrogates	-	-	-	-

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was: ☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, two RPD% exceedences in the duplicate samples and low metals concentrations in wash blanks are not considered to impact the overall useability of laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1052

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 10; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

Yes	No (Comment below)
☐	☒
N/A N/A N/A	N/A N/A N/A

A. Were an Adequate Number of intra- and inter-laboratory field duplicates analysed?

B. Were RPDs within Control Limits?
   a. Organics (± 50%)
   b. Metals/Inorganics (± 50%)
   c. Nutrients (± 50%)

COMMENTS:

Field duplicates were collected in batch 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	N/A	N/A
C. Were the Trip Blanks free of contaminants?	☐	☒
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Trip blanks and wash blanks were collected in batches 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Trip spikes were collected in batches 5E1100 during the same phase of the field investigation to certify the integrity of sampling, packaging and transport to the analytical laboratory.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	VOCs	OC/OP
Laboratory Blanks/Reagent Blanks	1	1	1	1	2
Matrix Spikes/Matrix Spike Duplicates	1	1	1	1	-
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2	-	-
Surrogates	-	1	3	3	-

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of a trip spike, trip blank and wash blank from these batches was not considered to impact the overall useability of laboratory data as they were collected in other batches during the same phase of the field investigations.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1071

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 8; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: 0

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	0	0
Trip Blanks	0	0
Wash Blanks	0	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☐	☒
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	N/A	N/A
b. Metals/Inorganics (± 50%)	N/A	N/A
c. Nutrients (± 50%)	N/A	N/A

COMMENTS:

Field duplicates were collected in batch 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☐	☒
B. Were an Adequate Number of wash blanks analysed?	☐	☒
C. Were the Trip Blanks free of contaminants?	N/A	N/A
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	N/A

COMMENTS:

Trip blanks and wash blanks were collected in batch 5E1100 during the same phase of the field investigation to certify the integrity of sampling and decontamination procedures.

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☐	☒
B. Were the Trip Spike results within control limits?	N/A	N/A

COMMENTS:

Trip spikes were collected in batches 5E1100 during the same phase of the field investigation to certify the integrity of sampling, packaging and transport to the analytical laboratory.

Field QA / QC was:

☐ **Satisfactory**

☒ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	OCPs	PCBs
Laboratory Blanks/Reagent Blanks	1	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2	0	0
Surrogates	0	1	3	2	0

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☐	☒	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

As noted above, the absence of a field duplicate, trip spike, trip blank and wash blank from these batches was not considered to impact the overall useability of laboratory data.

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**

Coffey Geosciences Pty Ltd

ABN 57 056 335 516
ACN 056 335 516

Environmental Division

QA/QC DATA VALIDATION REPORT

Job Number: E12723/04 Laboratory batch: Amdel 5E1100 and 5E1100A

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

Sample Handling was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

III. FIELD QA/QC

1. Number of Primary Samples analysed *(does not include duplicates)* — Soil: 8; Water: 0

2. Number of Days of Sampling: — Soil: 1; Water: N/A

3. Number and Type of QA/QC Samples analysed:

	SOIL	WATER
Intra-Laboratory Field Duplicates	1	0
Trip Blanks	0	1
Wash Blanks	0	1
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	1

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of intra-laboratory field duplicates analysed?	☒	☐
B. Were RPDs within Control Limits?		
a. Organics (± 50%)	☒	☐
b. Metals/Inorganics (± 50%)	☒	☐
c. Nutrients (± 50%)	☒	☐

COMMENTS:

III. FIELD QA/QC (Continued)

5. TRIP BLANKS / WASH BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks analysed?	☒	☐
B. Were an Adequate Number of wash blanks analysed?	☒	☐
C. Were the Trip Blanks free of contaminants?	☒	☐
D. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

COMMENTS:

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of Trip Spikes analysed?	☒	☐
B. Were the Trip Spike results within control limits?	☒	☐

COMMENTS:

Field QA / QC was:

☒ **Satisfactory**

☐ **Partially Satisfactory**

☐ **Unsatisfactory**

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1a. Type and Number of QA/QC Samples (Soil)

	Total Metals	TPH/BTEX	PAH	OCPs	PCBs
Laboratory Blanks/Reagent Blanks	1	1	1	1	1
Matrix Spikes/Matrix Spike Duplicates	1	1	1	0	0
Laboratory Control Samples / Duplicates	1	1	1	1	1
Laboratory Duplicates	2	2	2		
Surrogates	0	1	3	2	0

b. Type and Number of QA/QC Samples (Water)

	Total Metals	TPH/BTEX	PAHs
Laboratory Blanks/Reagent Blanks	1	2	1
Matrix Spikes/Matrix Spike Duplicates	0	0	0
Laboratory Control Samples / Duplicates	1	2	1
Laboratory Duplicates	0	0	0
Surrogates	0	1	3

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within control limits?		
a. Organics (60% to 120%)	☒	☐
b. Metals/Inorganic (70% to 130%)	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?	☒	☐
5. Were the surrogate recoveries within control limits?	☒	☐

COMMENTS:

The laboratory internal QA / QC was:

- ☒ **Satisfactory**
- ☐ **Partially Satisfactory**
- ☐ **Unsatisfactory**

V. SUMMARY OF QA / QC REPORT

	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	☒	☐	☐
Precision / Accuracy of the Laboratory Report	☒	☐	☐
Field QA / QC	☒	☐	☐
Laboratory Internal QA / QC	☒	☐	☐

VI. DATA USABILITY

1. Data Directly Usable ☒
2. Data Usable with the following corrections/modifications (see comment below) ☐
3. Data Not Usable. ☐

COMMENTS:

QA / QC Report Prepared by: **Anne Northway**

QA / QC Report Reviewed by: **Strider Duerinckx**