BERRIGAN SHIRE

LIMITED ENVIRONMENTAL SITE ASSESSMENT LOT 32; DP 778129, TOCUMWAL, NSW

E10183/1-AC

17 October 2005

E10183/1-AC CB
17 October 2005

BERRIGAN SHIRE
PO Box 137
BERRIGAN NSW 2712

Attention: Mr Wayne Chisholm

Dear Sir,

RE: LIMITED ENVIRONMENTAL SITE ASSESSMENT LOT 32; DP 778129, TOCUMWAL, NSW

Please find enclosed our limited Environmental Site Assessment completed at the above site. Three copies of the report are provided for your information.

Your attention is drawn to the enclosed sheet *"Important Information About Your Coffey Environmental Site Assessment."* If you have any further questions relating to this report or we can be of further assistance, please do not hesitate to contact the undersigned at your convenience.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD

TOBY HOBBS

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1. INTRODUCTION

This report presents the findings of a limited Environmental Site Assessment (ESA) completed by Coffey Geosciences Pty Ltd (Coffey) at the site forming part of the former RAAF aerodrome in Tocumwal, NSW. The site comprises an area of approximately 21Ha and lies to the south of Hutsons Road and west of Burma Road. The site is legally referred to as Lot 32; DP 778129. The ESA was commissioned by Mr Wayne Chisholm of Berrigan Shire and confirmed by the correspondence of 23 June 2005. It is understood that an independent assessment of the site was required to facilitate the processing of the development application for the proposed residential subdivision on the property.

The location of the site is shown on the Locality Plan, Figure 1.

1.1 Scope of Work

The scope of work undertaken during the course of this assessment included:

- A review of the site history/background;
- Completion of a soil sampling program across the site to gain an overview of sub-surface soil conditions;
- Submission of soil samples to a NATA registered laboratory; and
- Data analysis and reporting.

2. BACKGROUND

The site history study undertaken by Coffey to gain background information relating to the site included:

- a site visit;
- discussions with persons familiar with the subject lands;
- a review of records held by Berrigan Shire Council;
- a review of historical aerial photography for the last 36 years;
- a check of NSW Department of Environment and Conservation (DEC) records for notices on the site; and
- a search of the Department of Infrastructure, Planning and Natural Resources (DIPNR) for registered water bores in the area.

3. SITE HISTORY REVIEW

Information for the site history review was retrieved from the a review of Berrigan Shire records for the site, personnel communication with the property owner and other persons familiar with the site and a review of DEC records.

3.1 Previous Assessment and Site History

3.2 Site Identification and Zoning

The site comprises an area of approximately 21 ha legally referred to as Lot 32; DP 778129.

The subject site was part of the Tocumwal Military Aerodrome that operated during World War II; prior to this

time the land was undeveloped and used as open grazing land.

Construction at the Aerodrome site commenced during 1942 and involved the completion of approximately 115 km of sealed pavements. Sealing of runways, taxiways and roadways during construction reportedly consumed three (3) months supply of "tar" from Broken Hill Pty Ltd and the total "tarred" surface of the site was approximately 115 hectares.

It was reported that no environmental assessments had been previously completed on the subject property.

3.3 Berrigan Shire Council Records

A review of the Berrigan Shore records for the subject site as provided by Mr Wayne Chisholm of Berrigan Shire indicated that the site formed part of the Aerodrome lands prior to divestment by the Crown circa 1975. The Shires records indicated that 12 buried and 20 exposed 200L steel drums, each containing a viscous, asphalt emulsion like substance, were identified on a property located approximately 600m to the west of the subject site during mid February 2000. The drums were identified within and directly east of Lot 35 DP790167 (No. 6 Ingo Renner Drive) owned by Mrs Valerie Riley. Following identification of the drums, a soil excavation of the impacted areas was completed under the direction of Mr Bill Riley during June 2000; material excavated during the work program was transported to the Berrigan Waste Disposal Centre for temporary storage. No formal site validation was completed at the site were the buried waste was excavated. No records of the presence of potentially contaminated material were noted for the subject site.

3.4 Aerial Photograph Review

Aerial photographs of the site were purchased from the Department of Lands and reviewed. The results of the assessment are summarised in Table 1. Copies of the relevant portions of the photographs are presented within Appendix D.

TABLE 1.1: AERIAL PHOTOGRAPH REVIEW

YEAR	SITE	SURROUNDING LAND
1969	The site consists of cleared improved pasture with a few small trees or shrubs. In the north of the site there is a small dam while a dirt track runs diagonally through the site from the northeast to the southwest. Several large buildings and runways associated with the aerodrome are situated northeast of the site.	The land to the north of the subject site is mostly rural while residential development is apparent to the south and west.
1976	Similar to the previous photograph. Many of the small trees and shrubs have been removed from the site. The dirt track running diagonally through the subject site is still visible, but appear to be disused. The fields to the north appear to have been recently used for cropping.	A golf course has been developed immediately south of the subject site.

1991	The site is similar to the previous photograph. Most of the buildings associated with the aerodrome to the north east of the site have been removed. The disused dirt track running through the subject site in the previous photograph is still visible.	Considerable development has occurred to the west of the subject site.
1996	Similar to previous photograph. A new subdivision been constructed immediately west of the subject site.	Similar to previous photographs.
2003	Similar to previous photograph, with new houses constructed in the residential subdivision immediately west of the subject site.	Similar to previous photographs.

3.5 NSW DEC Notices Search

A check with the NSW Contaminated Land public record of DEC notices revealed that no notices have been issued within the area.

The contaminated land public record is a searchable database of:

- actions taken by the EPA under section 15, 17, 19, 21, 23, 26 or 28 of the *Contaminated Land Management Act 1997* (CLM Act)
- actions taken by the EPA under section 35 or 36 of the *Environmentally Hazardous Chemicals Act 1985* (EHC Act) *
- site audit statements provided to the EPA under section 52 of the CLM Act on sites subject to an in-force declaration or order (http://www.environment.nsw.gov.au/clm/aboutclmrecord.htm)

3.6 Groundwater Bore Search

NSW Department of Infrastructure Planning and Natural Resources (DIPNR) records were checked for registered groundwater bores within a 1km radius of the site to assess groundwater usage and quality within the vicinity of the site. The DIPNR records search is presented within Appendix E. Summary information from DIPNR indicated that no registered bores were located within a 1km radius of the site.

3.7 Contamination Potential

The documented site history indicated that the potential contamination sources at the site were likely related to burial of coal tar waste utilised during construction of roads, runways and taxi ways of the former Tocumwal Aerodrome facility.

On this basis, a relatively limited range of Potential Contaminants of Concern (PCOCs) may have been introduced onto the site, a summary of which is included in Table 3-1.

TABLE 3-1. POSSIBLE CONTAMINANT SOURCES AND POTENTIAL CONTAMINANTS OF CONCERN

Possible Source	Potential Contaminants of Concern (PCOCs)
Wastes containing coal tar	Polycyclic Aromatic Hydrocarbons (PAHs), Heavy Metals, total petroleum hydrocarbons (TPHs) and Phenols
Use of general pesticides and herbicides associated with agriculture	Organochlorine & Organophosphorous Pesticides

3.8 Regional Geology and Hydrogeology

The Geological Survey of New South Wales, 1:253,440 Series, Jerilderie S1/55-15 mapsheet, indicates that the site is likely located on "*Tertiary sediments consisting of clay, silt, sand and gravels".* The natural soils encountered in the boreholes were considered to be consistent with the geological map indication. Groundwater was not encountered within any of the boreholes.

4. FIELD INVESTIGATIONS

4.1 Sampling Strategy and Procedures

A Coffey Environmental Scientist and Geotechnician conducted the environmental fieldwork on 19 and 20 September 2005, which involved the collection of soil samples from a total of 46 boreholes, designated BH1 to BH46. The boreholes were completed using a 100mm hand auger and extended to a depth of approximately 0.6m. Boreholes were placed in a grid pattern across the site. Discrete soil samples were generally collected at 0.1 below grade and from 0.5 – 0.6m below grade.

Soil types were described in the field and borehole logs are provided in Appendix A together with explanatory sheets outlining the descriptive terms and symbols used.

All work was conducted in general accordance with standard Coffey environmental protocols with respect to sampling procedures, containers, sample handling, chain-of-custody documentation procedures and dispatched to the laboratory, i.e. following collection, soil samples were transferred to glass jars (125mL) and immediately sealed. These protocols are based on normal industry practice for these type of works. All sample containers were uniquely labelled, placed in eskys with ice packs and dispatched for analysis to the laboratory under standard chain-of-custody documentation procedures. Copies of the chain-of-custody record are included in Appendix B.

4.2 Decontamination

Decontamination of sampling equipment was completed in accordance with the Coffey Environmental Field Manual and comprised:

- removal of encrusted materials;
- brush scrubbing with Decon 90 detergent cleaning solution;
- rinse with deionised water; and
- final rinse with deionised water.

4.3 Laboratory Testing

Samples were analysed by the NATA registered laboratory of AMDEL of Clayton, Victoria. Analytical methods were based on standard methods and are presented below in Table 4-1. Laboratory detection limits were set at or below one-tenth of NEPC Environmental Investigation Levels (NEPC 1999) wherever possible in accordance with normal protocols.

The analysis program included analysis of:

- 50 soil samples for Polycylic Aromatic Hydrocarbons (PAH);
- 25 soil samples for metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc);
- 15 soil samples for Total Petroleum Hydrocarbons (TPH);
- 1 soil sample for Phenols;
- 1 soil samples for Organochlorine Pesticides (OCPs); and
- 1 soil samples for Organophosphorous Pesticides (OPPs).

TABLE 4-1. SUMMARY OF SOIL ANALYTICAL METHODS

Analytical Test	Analytical Method[1]
Heavy Metals	
Polycyclic Aromatic Hydrocarbons (PAHs)	512-MS
Total Petroleum Hydrocarbons (TPHs)	503P&T
Total Phenolics	244

[1] Details of the analytical methods can be obtained from the laboratory

4.4 Quality Assurance/Quality Control (QA/QC)

4.4.1 Procedures

Work on this project was completed in accordance with standard Coffey QA/QC procedures which specify sampling protocols, number and type of sample containers per sampling location, sample preservation methods, approved holding times, sample identification codes, QC sample requirements and chain of custody documentation procedures. Coffey QA/QC protocols are consistent with the requirement of current guidelines for site assessments.

In addition to the primary samples, quality control duplicates were collected to assess aspects of field protocols and laboratory performance and to classify the validity of the laboratory data. Two coded intra-laboratory soil sample duplicates were sent to the primary laboratory (AMDEL).

Disposable gloves were used during the collection of all samples, and discarded after each sample had been sealed in the appropriate container.

TABLE 4-2. QA/QC SUMMARY

Sample Type	No. of sampling days	Primary Samples Analysed	QC Duplicates Analysed
SOIL	2	50	4
TOTAL	2	50	4

4.4.2 Field QC Results

Data validation of duplicate samples was carried out by calculation of the relative percentage differences (RPDs) from the mean, i.e. the difference between the primary and duplicate sample results divided by the average of the two results and expressed as a percentage. Results of QC samples are presented in Table 5 in and the AMDEL NATA accredited reports are included in Appendix F.

4.4.2.1 Soil QC Results

The intra-laboratory analysis for blind duplicates RPDs within the acceptable range of ± 50% (AS4482.1-1997).

4.4.3 Laboratory QA Results for Soil Samples

AMDEL also conducted an internal QA/QC program comprising laboratory blanks, matrix duplicates and spikes on sample matrices and laboratory blanks (refer Appendix F). RPDs between laboratory matrix duplicates were within the acceptable range of ± 50% (Standards Australia, 1997).

The results of laboratory blanks were below detection limits indicating that no sample contamination had occurred as a result of handling in the laboratory.

Spiked sample analyses recorded recoveries that were all within acceptable control limits and are considered acceptable to validate the analytical dataset.

4.4.4 QA/QC Conclusions

On the basis of the field and laboratory QC results, it is considered that the field and laboratory programs have provided acceptable QA/QC results and that the results of the sampling and analysis program are sufficiently reliable to achieve the objectives of this assessment.

5. RESULTS OF FIELD AND LABORATORY PROGRAM

5.1 Site Observations

On 19 September 2005 a Coffey Environmental Scientist and Technician visited the site to determine if any indications of potential contamination were apparent at the site. During the site visit no odourous substances or visual evidence (surficial soil staining, stressed vegetation etc.) of contamination were observed. No evidence of former structures such as building footings or road base materials were observed. Particular attention was also paid to denoting evidence of soil disturbance that may have been related to waste burial;

no evidence of soil disturbance was noted.

The majority of the area was planted with introduced grass species and appeared to have been used for livestock grazing.

No irrigation or significant drainage channels were observed to intersect the site at the time of Coffey's visit. Selected site photographs are presented within Appendix C.

5.2 Subsurface Conditions

Based on the field observations made during the investigation and shown on the borehole logs included as Appendix A, the subsurface conditions at the site generally comprised of a sandy clay top-soil underlain by a fine to medium grained sandy to clay sandy of suspected alluvial origins.

Groundwater was not encountered within any of the boreholes completed during the assessment program.

5.3 Soil Assessment Criteria

For assessing contamination levels in soil, NEPC (1999) presents health based (Health Investigation Levels [HILs]) for different land uses (e.g. industrial/commercial, residential, recreational etc.) and Ecological Investigation Levels (EILs) which are generally phytotoxicity-based (i.e. indicate that soil contamination poses a possible risk to the successful establishment and growth of sensitive plants).

As the site will be potentially redeveloped for residential land use, analytical results have been compared to Column A HILs which consider the health scenario for low density residential sites with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake; no poultry).

Analytical results have also been compared to the EILs where relevant parameters are quoted in the NEPC Guidelines (NEPC 1999). However, currently no EILs have been developed for organochlorine pesticides (OCPs). As such, the Dutch B and Dutch C criteria have been used for comparison with analytical results (ANZECC 1990). Prior to completion of the NEPC Guidelines, Victorian EPA considered the ANZECC Guidelines (ANZECC 1992) as threshold values for environmental concern which could be applied to any land use, including residential land use. In the absence of criteria within the ANZECC (1992) guidelines, these guidelines direct the user to Dutch criteria. Consequently Dutch B criteria are considered to be appropriate for the pesticides where no NEPC or ANZECC "B" criteria have been specified.

Therefore, it is considered appropriate to adopt Dutch B criteria for organochlorine pesticides as EILs for the purposes of this ESA report and to adopt Dutch C as nominal clean-up criteria for organochlorine pesticides. Where concentrations of OCPs exceed the Dutch B criteria, concentrations are considered to be elevated and further investigation is required. Where concentrations exceed Dutch C criteria, concentrations are regarded as "of concern" and some form of clean-up or management may be required.

5.4 Soil Analytical Results

The results of laboratory analysis indicate that all analysed soil samples collected from the site contained contaminant concentrations at less than the Column A Health Investigation Levels (HILs).

All metal concentrations were also less than the Environmental Investigation Levels (EILs). All OCP concentrations were less than the Dutch C criteria (10mg/kg).

The AMDEL NATA accredited laboratory report for the soil analysis is included as Appendix F.

6. DISCUSSION & RECOMMENDATIONS

As with any assessment it is possible that not all potential contamination issues at the site have been identified and, as such, it is considered important that the potential developers adopts best practice with regard to site demolition and waste disposal activities during site redevelopment.

Any potentially contaminated areas (odorous/discoloured soils, potential waste burial pits, previously unidentified chemical/fuel storage areas i.e. 'materials of concern') should be reported to the relevant development Project Manager if they are encountered during proposed development works. An appropriately qualified Environmental Consultant could then be engaged to examine the material, to undertake any appropriate analysis or studies, and to determine an appropriate course of action.

6.1 Management or potentially contaminated material

All excavated materials of concern should be documented and disposed of in accordance with the recommendations of the environmental consultant and the requirements of the NSW DEC.

6.2 Records management

The party responsible for any engineering works on the site should keep detailed records of excavation restoration, including the retention of any landfill dockets.

6.3 Occupational health and safety

Appropriate Occupational Health and Safety (OH&S) strategies should be put in place for activities having the potential to involve contact with materials of concern. Typical OH&S precautions would include the following:

- All workers who may come into contact with materials of concern should wear appropriate personal protection equipment (PPE), i.e. gloves, overalls and dust masks.

Workers should ensure that they wash their hands before eating or drinking. Food and drink should not be consumed within work areas where materials of concern are present and a separate 'clean' area should be set aside for meal and refreshment breaks. Workers entering this 'clean area' should wash their face and hands and should ensure that no loose material adheres to clothing or footwear. PPE would not be brought into clean areas.

7. CONCLUSIONS

Based on the results of the historical review, site observations, sampling and laboratory analysis conducted to date, the conclusions of the Limited Environmental Site Assessment conducted by Coffey at Lot 32; DP 778129, Tocumwal are presented below:

- The site history review indicates the site was first developed circa 1942 as part of the former Tocumwal Military Aerodrome.
- The site history does not indicate any prior potentially contaminating land use on the subject property, however buried waste comprising of steel 200L containing a viscous, asphalt like emulsion were identified on a property located approximately 600m to the west of the site during early 2000.
- During a site walkover no visual or olfactory evidence of contamination was noted and no evidence of disturbed soil (such as that related to the disturbance associated with waste burial activities) was

noted.

- The subsurface conditions at the site generally comprised of a sandy clay top-soil underlain by a fine to medium grained sandy to clay sandy of suspected alluvial origins.
- Groundwater was not encountered within any of the boreholes completed during the assessment program.
- Based on the results of laboratory analysis program, all analysed soil samples obtained during the completion of a total of forty-six (46) boreholes across the site exhibited contaminant concentrations at less than applicable guidelines for protection of human health and the environment.
- We note that the current assessment did not include an investigation of groundwater quality and did not assess impacts on or from adjacent properties.

8. LIMITATIONS

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

Note that this report does not constitute a Statutory Environmental Audit Report in the meaning of its use in the Environment Protection Act (1970) and has NOT been prepared to comply with New South Wales EPA Auditor guidelines and requirements.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD

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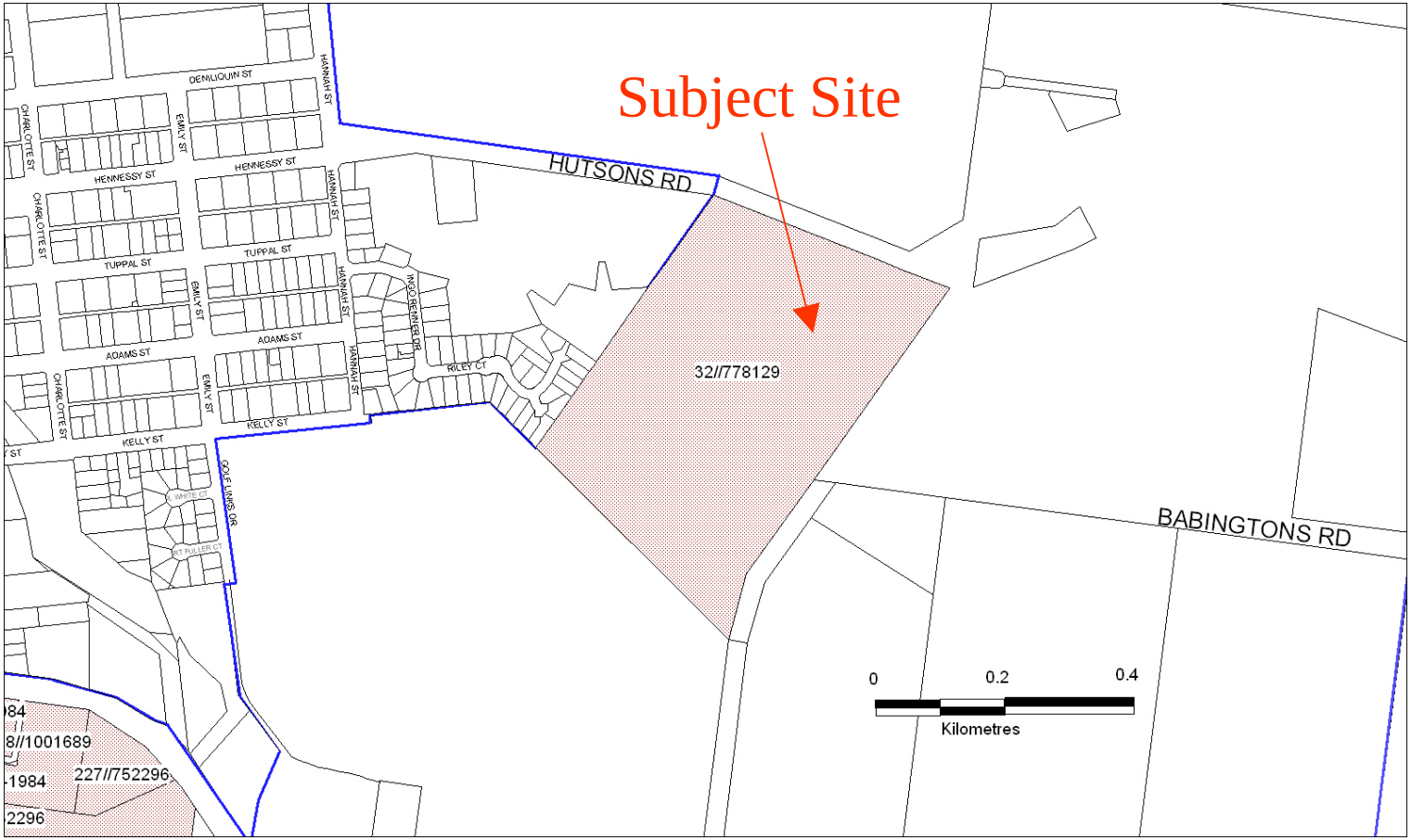
9. REFERENCES

- ANZECC (1990). "*Draft Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*" Published by the Australian & New Zealand Environment Council, National Health & Medical Research Council, June.
- ANZECC (1992). "*Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*" Published by the Australian & New Zealand Environment and Conservation Council, National Health & Medical Research Council.
- NEPC (1999). "*National Environmental Protection (Assessment of Site Contamination) Measure*"; National Environmental Protection Council, December.
- Standards Australia (1997). "*Guide to the Sampling and Investigation of Potentially Contaminated Soil - Part 1: Non-Volatile and Semi-Volatile Compounds*", AS4482.1-1997.



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Coffey

Notes:

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

Drawn	CB
Approved	
Date	18.10.2005
Scale	N.T.S

Lot 1; DP 802330 & Part Lot 2; DP 8023330
Huston's Road,
TOCUMWAL NSW
LOCALITTY PLAN

Figure No: 1

Job No. E10183/1

TABLE 1:

SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES

HEAVY METALS

(All results in mg/kg)

				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
		Threshold Concentration	[1]	100	20	12%	1000	300	15	600	7000
			[2]	20	3	400	100	600	1	60	200
Sample ID	Material	Date of Sampling	Depth (m)								
BH2/0.1	Soil	19-Sep-2005	0.1-0.2	7.8	<2.0	16	7.3	17	0.02	6.8	17
BH3/0.1	Soil	19-Sep-2005	0.1-0.2	4.9	<2.0	21	8.3	11	<0.01	10	22
BH5/0.1	Soil	19-Sep-2005	0.1-0.2	6.8	<2.0	17	12	25	0.02	9.8	25
BH7/0.1	Soil	19-Sep-2005	0.1-0.2	7.1	<2.0	20	11	16	0.02	10	27
BH9/0.1	Soil	19-Sep-2005	0.1-0.2	5.9	<2.0	30	18	20	0.02	23.0	51
BH9/0.5	Soil	19-Sep-2005	0.5-0.6	8.4	<2.0	32	20	19	0.02	20	49
BH10/0.1	Soil	19-Sep-2005	0.1-0.2	7.9	<2.0	26	14	18	0.02	15	32
BH11/0.1	Soil	19-Sep-2005	0.1-0.2	5.2	<2.0	22	11	13	0.01	13	26
BH14/0.1	Soil	19-Sep-2005	0.1-0.2	<2.0	<2.0	8.7	3.3	4.6	<0.01	4.2	10
BH17/0.1	Soil	19-Sep-2005	0.1-0.2	7	<2.0	30	16	13	0.02	15	33
BH18/0.1	Soil	19-Sep-2005	0.1-0.2	5	<2.0	18	9	12	<0.01	9.4	23
BH20/0.1	Soil	19-Sep-2005	0.1-0.2	6	<2.0	22	11	13	<0.01	12	26
BH23/0.1	Soil	20-Sep-2005	0.1-0.2	7.5	<2.0	23	11	17	<0.01	13	29
BH25/0.1	Soil	20-Sep-2005	0.1-0.2	3.4	<2.0	12	5.8	6.4	<0.01	7.2	12
BH29/0.1	Soil	20-Sep-2005	0.1-0.2	13	<2.0	27	15	24	0.01	16	32
BH31/0.1	Soil	20-Sep-2005	0.1-0.2	6.9	<2.0	27	12	15	0.01	15	31
BH33/0.1	Soil	20-Sep-2005	0.1-0.2	8.5	<2.0	28	15	20	0.01	15	33
BH37/0.1	Soil	20-Sep-2005	0.1-0.2	5.4	<2.0	19	9.1	12	<0.01	9	20
BH38/0.1	Soil	20-Sep-2005	0.1-0.2	4.6	<2.0	13	5.4	8.1	<0.01	6.3	12
BH40/0.1	Soil	20-Sep-2005	0.1-0.2	10	<2.0	32	18	22	0.03	16	30
BH41/0.1	Soil	20-Sep-2005	0.1-0.2	12	<2.0	29	13	21	0.02	12	31
BH41/0.5	Soil	20-Sep-2005	0.5-0.6	6.7	<2.0	30	18	16	<0.01	15	36
BH43/0.1	Soil	20-Sep-2005	0.1-0.2	6.8	<2.0	28	16	17	0.03	17	34
BH45/0.1	Soil	20-Sep-2005	0.1-0.2	7.7	<2.0	41	23	21	0.03	28	52
BH46/0.1	Soil	20-Sep-2005	0.1-0.2	6.8	<2.0	37	22	19	0.02	24	44

NOTES:

Bold Concentration exceeds the respective threshold concentration

[1] Based on NEPM (1999) Guidelines on the Investigation Levels for Soil and Groundwater ('Standard' residential with garden/accessible soil - HIL A)

[2] Based on NEPM (1999) Guidelines on the Investigation Levels for Soil and Groundwater ('Standard' residential with garden/accessible soil - HIL A)

[3] No relevant Guideline levels

See original laboratory reports for detection limits

TABLE 2:

SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES

ORGANOCHLORINE PESTICIDES

(All results in mg/kg)

Sample ID		BH45/0.1
Material		Soil
Date of Sampling		20-Sep-2005
Depth (m)		0.1-0.2
	THRESHOLD CONCENTRATION	
ORGANOCHLORINE PESTICIDES		
Aldrin	10 [1]	<0.5
alpha - BHC	- [3]	<0.5
alpha - Endosulphan	- [3]	<0.5
beta - BHC	0.5 [2]	<0.5
beta - Endosulphan	- [3]	<0.5
Chlordane	- [3]	<0.5
DDD	200 [1]	<0.5
DDE	200 [1]	<0.5
DDT	200 [1]	<0.5
delta - BHC	- [3]	<0.5
Dieldrin	10 [1]	<0.5
Endosulphan sulphate	- [3]	<0.5
Endrin	0.5 [2]	<0.5
Endrin Aldehyde	- [3]	<0.5
Heptachlor	10 [1]	<0.5
Heptachlorepoxide	- [3]	<0.5
Hexachlorobenzene	- [3]	<0.5
Lindane (gamma BHC)	- [3]	<0.5
Methoxychlor	0.5 [2]	<0.5

NOTES:

Bold Concentration exceeds the respective threshold concentration

[1] Based on NEPM (1999) Guidelines on the Investigation Levels for Soil and Groundwater ('Standard' residential with garden/accessible soil - HIL A)

[2] Based on Dutch B criteria

[3] No relevant Guideline levels

See original laboratory reports for detection limits

TABLE 3:
SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES
TPH & BTEX
(All results in mg/kg)

				TPH C6-C9	TPH C10-C14	TPH C15-C28	TPH C29-C36	TPH C10-C36	Total Phenols
		Threshold Concentration[1]		65	-	-	-	1000	8500
Sample ID	Material	Date of Sampling	Depth (m)						
BH2/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH3/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH5/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH9/0.5	Soil	19-Sep-2005	0.5-0.6	<5.0	<20	<20	<20	<60	<0.1
BH10/0.1	Soil	19-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH11/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH14/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH17/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH18/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH20/0.1	Soil	19-Sep-2005	0.1-0.2	<5.0	<20	<21	<20	<60	<0.1
BH23/0.1	Soil	20-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH25/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH29/0.1	Soil	20-Sep-2005	0.1-0.2	<5.0	<20	<21	<20	<60	<0.1
BH31/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH33/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH37/0.1	Soil	20-Sep-2005	0.1-0.2	<5.0	<20	<20	<20	<60	<0.1
BH38/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH40/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH41/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH41/0.5	Soil	20-Sep-2005	0.5-0.6	-	-	-	-	-	-
BH43/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH45/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-
BH46/0.1	Soil	20-Sep-2005	0.1-0.2	-	-	-	-	-	-

NOTES:

Bold Concentration exceeds the respective threshold concentration

[1] Based on NEPM (1999) Guidelines on the Investigation Levels for Soil and Groundwater ('Standard' residential with garden/accessible soil - HIL A)

- No relevant Guideline levels

See original laboratory reports for detection limits

TABLE 4:

SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES

POLYAROMATIC HYDROCARBONS

(All results in mg/kg)

Sample ID	Material	Threshold Concentration[1] Date of Sampling	Depth (m)	Acenaphthene -	Acenaphthylene -	Anthracene -	Benz(a)anthracene -	Benzo(a)pyrene -	Benzo(b)fluoranthene -	Benzo(g,h,i)perylene -	Benzo(k)fluoranthene -	Chrysene -	Dibenz(a,h)anthracene -	Fluoranthene -	Fluorene -	Indeno(1,2,3-c,d)pyrene -	Naphthalene -	Phenanthrene -	Pyrene -	Total PAH's 20
BH1/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH2/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH3/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH4/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH5/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH6/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH7/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH8/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH9/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH9/0.5	Soil	19-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH10/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH11/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH11/0.5	Soil	19-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH12/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH13/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH14/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15/0.5	Soil	19-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH17/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH18/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH19/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH20/0.1	Soil	19-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH21/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH22/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH23/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH24/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH25/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH27/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH28/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH29/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH30/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH31/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH32/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH33/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH34/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH35/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH36/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH37/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH38/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH39/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH40/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH41/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH41/0.5	Soil	20-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH42/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH43/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH44/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH44/0.5	Soil	20-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH45/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH45/0.5	Soil	20-Sep-2005	0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH46/0.1	Soil	20-Sep-2005	0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

NOTES:

Bold Concentration exceeds the respective threshold concentration

[1] Based on NEPM (1999) Guidelines on the Investigation Levels for Soil and Groundwater ('Standard' residential with garden/accessible soil - HIL A)

- No relevant Guideline levels

See original laboratory reports for detection limits

Coffey

TABLE 5:
SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES
Duplicates
(All results in mg/kg)

Duplicate Evaluation for Metals

Analyte	**Sample**	As	Cd	Cr	Cu	Hg	Pb	Ni	Zn
Primary Sample	BH10/0.1	7.9	<2.0	26	14	0.02	18	15	32
Duplicate	DUP - A	7	<2.0	25	18	0.03	20	16	39
RPD%		**12**	**0**	**4**	**25**	**40**	**11**	**6**	**20**

Analyte	**Sample**	As	Cd	Cr	Cu	Hg	Pb	Ni	Zn
Primary Sample	BH17/0.1	7	<2.0	30	16	0.02	13	15	33
Duplicate	DUP - B	5.1	<2.0	18	12	0.01	15	12	31
RPD%		**31**	**0**	**50**	**29**	**67**	**14**	**22**	**6**

Analyte	**Sample**	As	Cd	Cr	Cu	Hg	Pb	Ni	Zn
Primary Sample	BH31/0.1	7	<2.0	27	12	0.01	15	15	31
Duplicate	DUP - C	12	<2.0	21	12	0.02	22	12	27
RPD%		**53**	**0**	**25**	**0**	**67**	**38**	**22**	**14**

Analyte	**Sample**	As	Cd	Cr	Cu	Hg	Pb	Ni	Zn
Primary Sample	BH40/0.1	10	<2.0	32	18	0.03	22	16	30
Duplicate	DUP - D	9.7	<2.0	26	16	0.01	23	15	33
RPD%		**3**	**0**	**21**	**12**	**100**	**4**	**6**	**10**

Duplicate Evaluation for PAH's

Analyte	**Sample**	Acenaphth	Acenaphth	Anthracene	Benz(a)ant	Benzo(a)py	Benzo(b)flu	Benzo(g,h,	Benzo(k)flu	Chrysene	Dibenz(a,h	Fluoranthe	Fluorene	Indeno(1,2	Naphthaler	Phenanthre	Pyrene
Primary Sample	BH10/0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Duplicate	DUP - A	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD%		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Analyte	**Sample**	Acenaphth	Acenaphth	Anthracene	Benz(a)ant	Benzo(a)py	Benzo(b)flu	Benzo(g,h,	Benzo(k)flu	Chrysene	Dibenz(a,h	Fluoranthe	Fluorene	Indeno(1,2	Naphthaler	Phenanthre	Pyrene
Primary Sample	BH17/0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Duplicate	DUP - B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD%		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Analyte	**Sample**	Acenaphth	Acenaphth	Anthracene	Benz(a)ant	Benzo(a)py	Benzo(b)flu	Benzo(g,h,	Benzo(k)flu	Chrysene	Dibenz(a,h	Fluoranthe	Fluorene	Indeno(1,2	Naphthaler	Phenanthre	Pyrene
Primary Sample	BH31/0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Duplicate	DUP - C	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD%		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Analyte	**Sample**	Acenaphth	Acenaphth	Anthracene	Benz(a)ant	Benzo(a)py	Benzo(b)flu	Benzo(g,h,	Benzo(k)flu	Chrysene	Dibenz(a,h	Fluoranthe	Fluorene	Indeno(1,2	Naphthaler	Phenanthre	Pyrene
Primary Sample	BH40/0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Duplicate	DUP - D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD%		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

APPENDIX A

COFFEY ENGINEERING LOGS - BOREHOLES

Coffey Geosciences Pty Ltd ACN 056 335 516

Engineering Log - Borehole

Borehole No. ***BH1***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***19.9.2005***

Principal:

Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**SANDY CLAY:** Low plasticity, red, light brown.	D			ALLUVIUM
				D		0.5		CL	**SANDY CLAY:** Low plasticity, red, traces of fine to medium grained gravel.				
						1.0			Borehole BH1 terminated at 0.5m				
						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. ***BH2***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, fine to coarse grained sand.	D			TOPSOIL
				D				CL	**SILTY SANDY CLAY:** Low plasticity, light brown.				ALLUVIUM
								CL	**SANDY CLAY:** Low plasticity, light brown, traces of fine grained gravel.				
				D		0.5							
									Borehole BH2 terminated at 0.5m				
						1.0							
						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. ***BH3***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, fine to coarse grained sand.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Low plasticity, light brown, red, sand fine to coarse grained.				ALLUVIUM`
				D		0.5		CL	**SANDY CLAY:** Low plasticity, red, sand fine to coarse grained.				
									Borehole BH3 terminated at 0.5m				
						1.0							
						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. ***BH4***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Low plasticity, light brown, red, sand fine to coarse grained.				ALLUVIUM
				D		0.5		CL	**SANDY CLAY:** Low plasticity, red, sand fine to coarse grained, traces of fine to medium grained gravel.				
						1.0			Borehole BH4 terminated at 0.5m				
						1.5							
						2.0							

BOREHOLE A10183.GPJ COFFEY.GDT 25.10.05

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. ***BH5***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Medium plasticity, dark brown, traces of fine grained sand.				ALLUVIUM
				D		0.5			Borehole BH5 terminated at 0.5m				
						1.0							
						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. ***BH6***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**CLAY:** Medium plasticity, dark brown, traces of fine grained sand.				ALLUVIUM
								CL	**SANDY CLAY:** Medium plasticity, light brown, sand fine to coarse grained.				
				D		0.5			Borehole BH6 terminated at 0.5m				
						1.0							
						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. ***BH7***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown, traces of fine grained sand.				ALLUVIUM
				D		0.5			Borehole BH7 terminated at 0.5m				
						1.0							
						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. ***BH8***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown.				ALLUVIUM
				D		0.5			Borehole BH8 terminated at 0.5m				
						1.0							
						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. ***BH9***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown.				ALLUVIUM
													Black coal-like product.
				D		0.5			Borehole BH9 terminated at 0.5m				
						1.0							
						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. ***BH10***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Medium plasticity, light brown, sand fine to coarse grained.				ALLUVIUM Black coal-like product.
				D		0.5		CL	**SANDY CLAY:** Medium plasticity, brown, sand fine to coarse grained.				
						1.0			Borehole BH10 terminated at 0.5m				
						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. ***BH11***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Medium plasticity, light brown, traces of fine grained sand.				ALLUVIUM
				D		0.5							Trace coal-like product.
									Borehole BH11 terminated at 0.5m				
						1.0							
						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. ***BH12***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Medium plasticity, light brown, sand fine to coarse grained.				ALLUVIUM
								CL	**CLAY:** Medium plasticity, brown, red, with some fine grained sand.				
				D		0.5							
									Borehole BH12 terminated at 0.5m				
						1.0							
						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. ***BH13***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, light brown, red, low plasticity.				ALLUVIUM
				D		0.5			Borehole BH13 terminated at 0.5m				
						1.0							
						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. ***BH14***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, light brown, low plasticity.				ALLUVIUM
				D		0.5							
									Borehole BH14 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH15***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***19.9.2005***

Principal:

Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Fine to medium grained, light brown, low plasticity.				ALLUVIUM
				D									
				D		0.5			Borehole BH15 terminated at 0.5m				
						1.0							
						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. ***BH16***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Engineering Log - Borehole

Client: ***Berrigan Shire***

Date started: ***19.9.2005***

Principal:

Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**CLAY:** Medium plasticity, dark brown, black.				ALLUVIUM
				D		0.5		CL	**CLAY:** Medium plasticity, light brown, traces of fine grained sand.				
						1.0			Borehole BH16 terminated at 0.5m				
						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. ***BH17***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Medium plasticity, dark brown, black, traces of fine to coarse grained sand.				ALLUVIUM
				D		0.5			Borehole BH17 terminated at 0.5m				Trace coal-like product.
						1.0							
						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. ***BH18***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown, black, traces of fine to coarse grained sand.				ALLUVIUM
													Coal-like product.
				D		0.5							
									Borehole BH18 terminated at 0.5m				
						1.0							
						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. ***BH19***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***19.9.2005***

Principal: Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown.				ALLUVIUM
				D		0.5			Borehole BH19 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH20***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***19.9.2005***

Principal:

Date completed: ***19.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**CLAY:** Medium plasticity, dark brown, traces of fine grained gravel, traces of fine grained sand.				ALLUVIUM
				D		0.5							
									Borehole BH20 terminated at 0.5m				
						1.0							
						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. ***BH21***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM Coal-like product.
				D		0.5		CL	**SANDY CLAY:** Medium plastcity, brown, sand fine to coarse grained, traces of fine grained gravel.				
									Borehole BH21 terminated at 0.5m				
						1.0							
						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. ***BH22***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH22 terminated at 0.5m				
						1.0							
						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. ***BH23***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Low to medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH23 terminated at 0.5m				
						1.0							
						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. ***BH24***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Low to medium plasticity, brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH24 terminated at 0.5m				
						1.0							
						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. ***BH25***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				SC	**CLAYEY SAND:** Fine to coarse grained, light brown, low plasticity.				ALLUVIUM
								CL	**SANDY CLAY:** Low to medium plasticity, light brown, sand fine to coarse grained.				
				D		0.5							
									Borehole BH25 terminated at 0.5m				
						1.0							
						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. ***BH26***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, light brown, red, low plasticity.				ALLUVIUM
				D		0.5			Borehole BH26 terminated at 0.5m				
						1.0							
						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. ***BH27***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to medium grained, light brown, red, low plasticity,				ALLUVIUM
				D		0.5			Borehole BH27 terminated at 0.5m				
						1.0							
						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. ***BH28***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, light brown, low plasticity.				ALLUVIUM
				D		0.5							
									Borehole BH28 terminated at 0.5m				
						1.0							
						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. ***BH29***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Medium plasticity, dark brown, black, sand fine to coarse grained.				ALLUVIUM
				D		0.5							Coal-like product.
									Borehole BH29 terminated at 0.5m				
						1.0							
						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

BOREHOLE A10183.GPJ COFFEY.GDT 25.10.05

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Coffey Geosciences Pty Ltd ACN 056 335 516

Borehole No. ***BH30***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Medium plasticity, dark brown, black, with some fine grained sand.				ALLUVIUM
				D		0.5			Borehole BH30 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH31***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Low to medium plasticity, light brown, brown.				ALLUVIUM
				D									
				D		0.5			Borehole BH31 terminated at 0.5m				
						1.0							
						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. ***BH32***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, light brown, low plasticity.				ALLUVIUM
				D		0.5			Borehole BH32 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH33***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH33 terminated at 0.5m				
						1.0							
						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. ***BH34***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Engineering Log - Borehole

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
				D				CL	**SANDY CLAY:** Medium plasticity, light brown, sand fine to coarse grained.				ALLUVIUM
								CL	**SANDY CLAY:** Medium plasticity, red, sand fine to coarse grained.				
				D		0.5			Borehole BH34 terminated at 0.5m				
						1.0							
						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. ***BH35***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**CLAY:** Medium plasticity, dark brown, with some fine grained sand.				ALLUVIUM
				D		0.5							Some coal-like product.
									Borehole BH35 terminated at 0.5m				
						1.0							
						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. ***BH36***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown, black, traces of fine grained sand, traces of fine grained gravel.				ALLUVIUM
				D		0.5			Borehole BH36 terminated at 0.5m				Black coal-like product.
						1.0							
						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. ***BH37***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, brown, red, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH37 terminated at 0.5m				
						1.0							
						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. ***BH38***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								SC	**CLAYEY SAND:** Fine to coarse grained, red brown, medium plasticity.				ALLUVIUM
				D		0.5			Borehole BH38 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH39***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Low to medium plasticity, light brown, red, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH39 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH40***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, light brown, red, sand fine to coarse grained.				ALLUVIUM
				D									
				D		0.5			Borehole BH40 terminated at 0.5m				
						1.0							
						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. ***BH41***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Low to medium plasticity, light brown, sand fine to coarse grained.				ALLUVIUM
				D									
				D		0.5			Borehole BH41 terminated at 0.5m				
						1.0							
						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. ***BH42***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, light brown, red, sand fine to coarse grained.				ALLUVIUM
				D									
						0.5			Borehole BH42 terminated at 0.5m				
						1.0							
						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. ***BH43***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL/CH	**CLAY:** Medium to high plasticity, dark brown, traces of fine grained sand.				ALLUVIUM
				D		0.5			Borehole BH43 terminated at 0.5m				
						1.0							
						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. ***BH44***

Sheet 1 of 1

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed					CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Low to medium plasticity, light brown, sand fine to coarse grained.				ALLUVIUM
				D									
				D		0.5			Borehole BH44 terminated at 0.5m				
						1.0							
						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

Engineering Log - Borehole

Borehole No. ***BH45***

Sheet 1 of 1

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire***

Date started: ***20.9.2005***

Principal:

Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment***

Logged by: ***CB***

Borehole Location: ***Refer to site plan***

Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5							
									Borehole BH45 terminated at 0.5m				
						1.0							
						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. ***BH46***

Sheet 1 of 18

Engineering Log - Borehole

Office Job No.: ***E10183/1***

Client: ***Berrigan Shire*** Date started: ***20.9.2005***

Principal: Date completed: ***20.9.2005***

Project: ***Envirnmental Site Assessment*** Logged by: ***CB***

Borehole Location: ***Refer to site plan*** Checked by:

drill model and mounting: Hand Auger | Easting: | slope: -90° | R.L. Surface: ESL

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

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	Not Observed	D				CL	**TOPSOIL:** Sandy clay, low plasticity, brown, sand fine to coarse grained.	D			TOPSOIL
								CL	**SANDY CLAY:** Medium plasticity, dark brown, sand fine to coarse grained.				ALLUVIUM
				D		0.5			Borehole BH46 terminated at 0.5m				
						1.0							
						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

APPENDIX B

CHAIN OF CUSTODY RECORDS

Chain of Custody

No: 28369

Laboratory Quotation / Order No:

Job No: E0183

Sheet 1 of 2

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: COLIN BROWN	Consigning Officer: C BROWN Date Dispatched: 21/09/05
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TROY HOBBS	Courier Service: AUST AIR EXPRESS Consignment Note No: AE 275200

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09/05			23/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals	Phenols	Sample Condition on Receipt
	SOIL	125mL GLASS JAR	BH1 /0.1	19/09/05	X					
	"	"	BH1 /0.5	"						
	"	"	BH2 /0.1	"	X	X		X	X	
	"	"	BH2 /0.5	"						
	"	"	BH3 /0.1	"	X	X		X	X	
	"	"	BH3 /0.5	"						
	"	"	BH4 /0.1	"	X					
	"	"	BH4 /0.5	"						
	"	"	BH5 /0.1	"	X	X		X	X	
	"	"	BH5 /0.5	"						
	"	"	BH6 /0.1	"	X					
	"	"	BH6 /0.5	"						
	"	"	BH7 /0.1	"	X			X		
	"	"	BH7 /0.5	"						
	"	"	BH8 /0.1	"	X					
	"	"	BH9 /0.5	"						
	"	"	BH9 /0.1	"	X			X		

COFFEY – ALB Rec:23/09
BH1/0.1
0510882/001

Special Laboratory Instructions: METALS: Cu, Pb, Zn, Cr, Cd, Ni, As, Hg

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.

20053/11-01

Chain of Custody

No: 28370

Laboratory Quotation / Order No:

Job No: E6483 1

Sheet 2 of 9

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: Corey Brand	Consigning Officer: C Brand Date Dispatched: 21/9/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TOBY HOBBS	Courier Service: Aust Air Express Consignment Note No: AC275608

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/9/09			22/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 9	Asbestos										Sample Condition on Receipt
	Soil	125mL GLASSJAR	BH9 0.5	19/09	X	X		X	X										
	"	"	BH10 0.1	"	X			X											
	"	"	BH10 0.5	"															
	"	"	BH11 0.1	"	X	X		X	X										
	"	"	BH11 0.5	"	X														
	"	"	BH 12 0.1	"	X														
	"	"	BH 12 0.5	"															
	"	"	BH 13 0.1	"	X														
	"	"	BH 13 0.5	"															
	"	"	BH 14 0.1	"	X	X		X	X										
	"	"	BH 14 0.5	"															
	"	"	BH 15 0.1	"	X														
	"	"	BH 15 0.5	"	X														
	"	"	BH 16 0.1	"															
	"	"	BH 16 0.5	"															
	"	"	BH 17 0.1	"	X	X		X	X										
	"	"	BH 17 0.5	"															

Special Laboratory Instructions: METALS: Cu, Pb, Zn, Cr, Cd, Ni, As, Hg

Detection Limits:

Turnaround Required:

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

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20053/11-01

Chain of Custody

No: 28371

Laboratory Quotation / Order No:

Job No: E10135/1

Sheet 3 of 9

Coffey

Dispatch to: (Address & Phone No.) NMDEL	Sampled by: COREY BROWN	Consigning Officer: C BROWN Date Dispatched: 21/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TOBY HOBBS	Courier Service: AGST AIR EXPRESS Consignment Note No: AE 275600

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09		NEWMEL	22/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	8 metals											Sample Condition on Receipt
	SOIL	125ml GLASS JAR	BH 18/0.1	19/09	X	X		X	X											
	"	"	BH 18 /0.5	"																
	"	"	BH 19 /0.1	"	X															
	"	"	BH 19 /0.5	"																
	"	"	BH 20 /0.1	"	X	X		X	X												
	"	"	BH 20/0.5	"																
	"	"	BH 21 /0.1	20/09	X															
	"	"	BH 21 /0.5	"																
	"	"	BH 22 /0.1	"	X															
	"	"	BH 22 /0.5	"																
	"	"	BH 23 /0.1	"	X	X		X	X												
	"	"	BH 23 /0.5	"																
	"	"	BH 24 /0.1	"	X																
	"	"	BH 24 /0.5	"																
	"	"	BH 25 /0.1	"	X			X													
	"	"	BH 25/0.5	"																
	"	"	BH 27 /0.1	"	X																

Special Laboratory Instructions:

METALS: Cu, Pb, Zn, Cr, Cd, Ni, As, Hg

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.

Chain of Custody

No: 28372

Laboratory Quotation / Order No: Job No: E10235/1 Sheet 4 of 9

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: COREY SRAND	Consigning Officer: C. SRAND Date Dispatched: 21/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TOBY HORRS	Courier Service: AUST. A.R EXPRESS Consignment Note No: AE275600

Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	Asbestos										Sample Condition on Receipt
	SOIL	125ml GLASS JAR	BH 27 0.5	20/09															
	"	"	BH 28 0.1	"	X														
	"	"	BH 28 0.5	"															
	"	"	BH 29 0.1	"	X	X		X	X										
	"	"	BH 29 0.5	"															
	"	"	BH 30 0.1	"	X														
	"	"	BH 30 0.5	"															
	"	"	BH 31 0.1	"	X			X											
	"	"	BH 31 0.5	"															
	"	"	BH 32 0.1	"	X														
	"	"	BH 32 0.5	"															
	"	"	BH 33 0.1	"	X			X											
	"	"	BH 33 0.5	"															
	"	"	BH 34 0.1	"	X														
	"	"	BH 34 0.5	"															
	"	"	BH 35 0.1	"	X														
	"	"	BH 35 0.5	"															

Special Laboratory Instructions: METALS: As, Cu, Cr, Cd, Pb, Zn, Hg, Ni

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.

20053/11-01

Chain of Custody

No: 28373

Laboratory Quotation / Order No: | Job No: E0353/1 | Sheet 5 of 9

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CHRIS BROWN	Consigning Officer: C BROWN Date Dispatched: 21/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TONY HOBBS	Courier Service: AUST AIR EXPRESS Consignment Note No: AE173600

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09			23/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	PHENOLS	Sample Condition on Receipt
	SOIL	125mL GLASS JAR	BH 36 0.1	20/09	X					
	"	"	BH 36 0.5							
	"	"	BH 37 0.1		X	✓		X	X	
	"	"	BH 37 0.5							
	"	"	BH 38 0.1		X			X		
	"	"	BH 38 0.5							
	"	"	BH 39 0.1		X					
	"	"	BH 39 0.5							
	"	"	BH 40 0.1		X			X		
	"	"	BH 40 0.5							
	"	"	BH 41 0.1		X			X		
	"	"	BH 41 0.5		X			X		
	"	"	BH 42 0.1		X					
	"	"	BH 42 0.5							
	"	"	BH 43 0.1		X			X		
	"	"	BH 43 0.5							
	"	"	BH 40 0.1		X					

Special Laboratory Instructions:

METALS Cu, Pb, Zn, Cr, Cd, Ni, As, Hg

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.

20053/11-01

No: 28375

Chain of Custody

Laboratory Quotation / Order No:

Job No: E101831 | Sheet 6 of 8

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: COLBY BRAND	Consigning Officer: C. BRAND Date Dispatched: 21/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TONY HOBBS	Courier Service: AUST AIR EXPRESS Consignment Note No: AC275600

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09			23/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	OCP	OPP	Sample Condition on Receipt
	SOIL	125mL GLASS JAR	BH 44 0.5	20/09	X						
	"	"	BH 45 0.1	"	X			X	X	X	
	"	"	BH 45 0.5	"	X						
	"	"	BH 46 0.1	"	X			X			
	"	"	BH 46 0.5	"							
	"	"	BH 50 0.1	21/09				X	X	X	
	"	"	BH 50 0.5	"							
	"	"	BH 51 0.1	"				X			
	"	"	BH 51 0.5	"							
	"	"	BH 52 0.1	"				X	X	X	
	"	"	BH 52 0.5	"							
	"	"	BH 53 0.1	"				X			
	"	"	BH 53 0.5	"							
	"	"	BH 54 0.1	"				X	X	X	
	"	"	BH 54 0.5	"							
	"	"	BH 55 0.1	"				X	X	X	
	"	"	BH 55 0.5	"							

Special Laboratory Instructions:

METALS Ba, Cd, Cr, Cu, Hg, Ni, Pb, Zn

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.

Chain of Custody

No: 28376

Laboratory Quotation / Order No:

Job No: E10123/1 Sheet 1 of 3

Coffey

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: CORY BROWN	Consigning Officer: C BROWN Date Dispatched: 21/09
Attention: SAMPLE REGIST	Project Manager: (report results to) TOBY HOBBS	Courier Service: AUST. AIR EXPRESS Consignment Note No: AK27500

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09			22/9	9:00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	OC/OP										Sample Condition on Receipt
	SOIL	125mL GLASS JAR	BH 56 0.1	21/09				X											
	"	"	BH 56 0.5	"															
	"	"	BH 57 0.1	"				X	X										
	"	"	BH 57 0.5	"															
	"	"	BH 58 0.1	"				X											
	"	"	BH 58 0.5	"															
	"	"	BH 59 0.1	"				X	X										
	"	"	BH 59 0.5	"															
	"	"	BH 60 0.1	"				X											
	"	"	BH 60 0.5	"															
	"	"	BH 61 0.1	"				X	X										
	"	"	BH 61 0.5	"															
	"	"	BH 62 0.1	"				X											
	"	"	BH 62 0.5	"															
	"	"	BH 63 0.1	"				X	X										
	"	"	BH 63 0.5	"															
	"	"	BH 64 0.1	"				X	X										

Special Laboratory Instructions:

METALS: (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)

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.

20053/11-01

Chain of Custody

No: 28377

Coffey

Laboratory Quotation / Order No:

Job No: E10152/1 Sheet 8 of 9

Dispatch to: (Address & Phone No.) AMDEL	Sampled by: COREY BROWN	Consigning Officer: C Brown Date Dispatched: 21/09
Attention: SAMPLE RECEIPT	Project Manager: (report results to) TOBY HOBBS	Courier Service: AUST. AIR EXPRESS Consignment Note No: AC 275800

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	21/09			22/9/09	9 am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8	8 plus	Sample Condition on Receipt
	SOIL	125mL GLASS JAR	BH 64 / 0.5	21/09						
	"	"	BH 65 / 0.1	"				X	X	
	"	"	BH 65 / 0.5	"						
	"	"	BH 66 / 0.1	"				X	X	
	"	"	BH 66 / 0.5	"						
	"	"	BH 67 / 0.1	"				X	X	
	"	"	BH 67 / 0.5	"						
	"	"	BH 68 / 0.1	"				X	X	
	"	"	BH 68 / 0.5	"						
	"	"	BH 69 / 0.1	"				X	X	
	"	"	BH 69 / 0.5	"						
	"	"	DUP A	"	✓			X		
	"	"	DUP B	"	X			X		
	"	"	DUP C	"	✓			X		
	"	"	DUP D	"	✓			X		
	"	"	SPLIT E	"			[redacted]	X		
	"	"	DUP F	"				X		

Special Laboratory Instructions: Dup G Extra (on HOLD)

METALS: As, Cr, Cd, Cu, Hg, Ni, Pb, Zn

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.

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APPENDIX C

SITE PHOTOGRAPHS

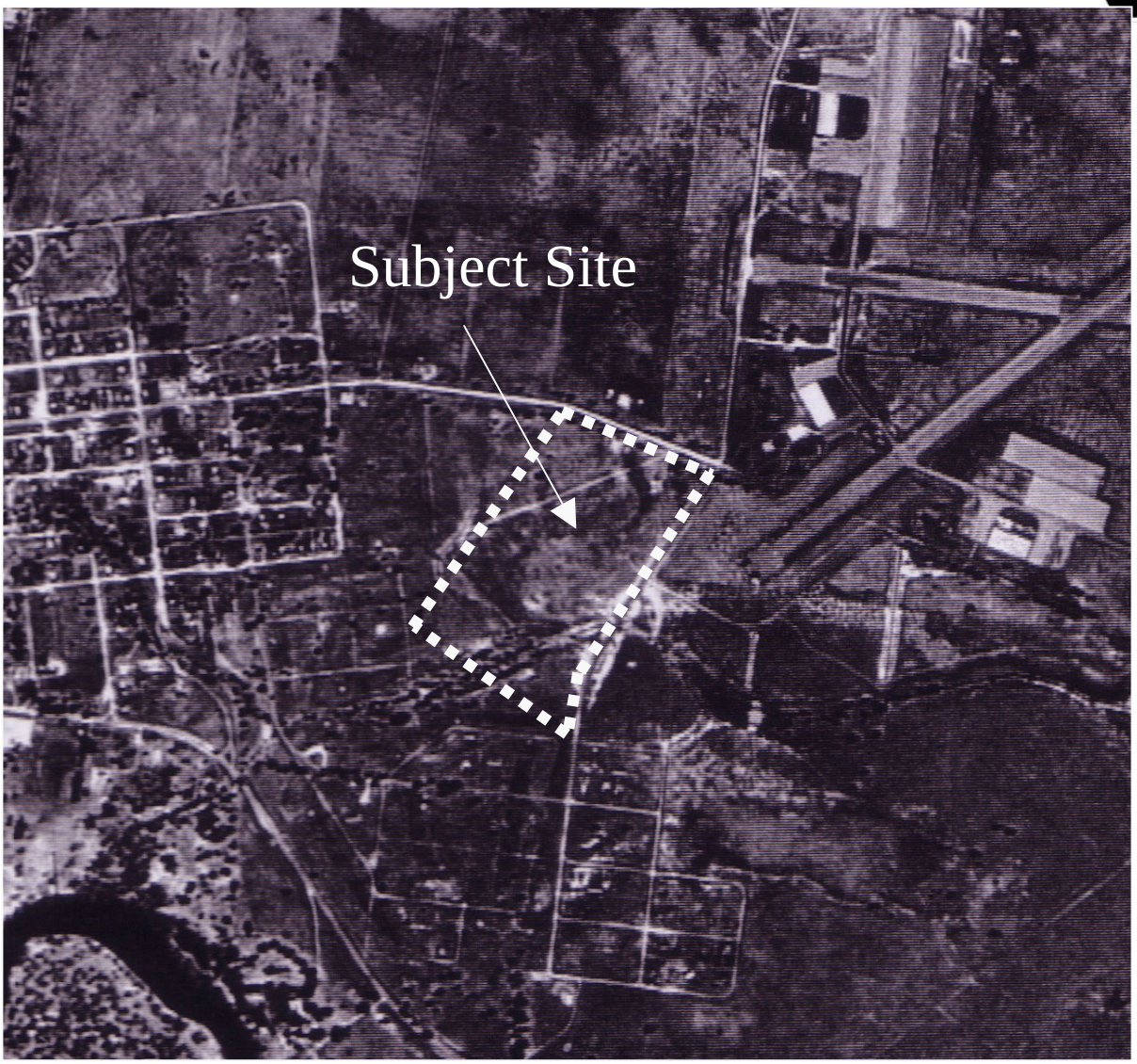
Plate 1 : Hutsons's Road, Tocumwal. View north west over subject site. New development visible in the background.

Plate 2 : Hutsons's Road, Tocumwal. View north over subject site. The current aerodrome site is visible in the background.

APPENDIX D

SITE AERIAL PHOTOGRAPHS

N



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

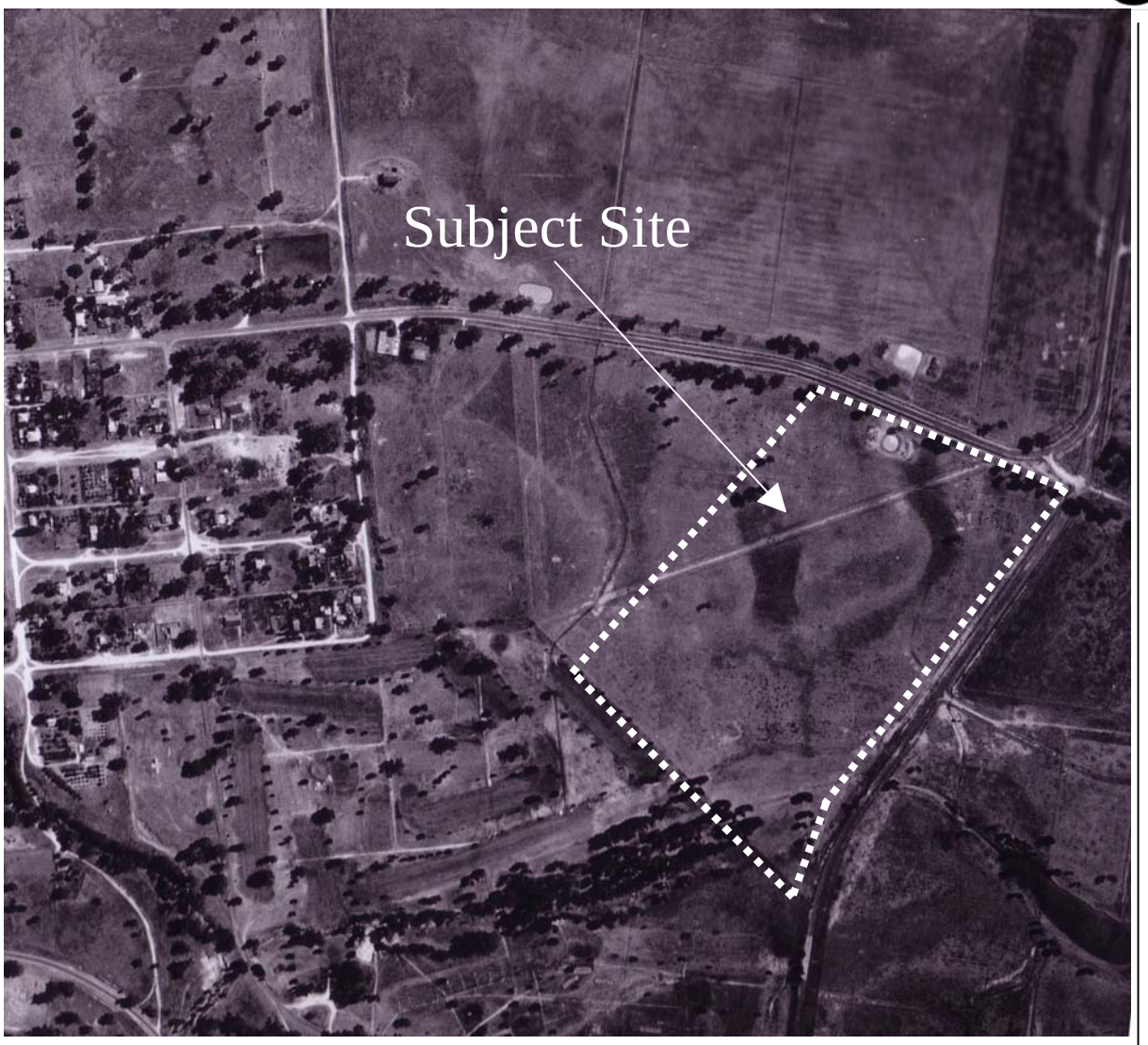
Drawn	CWB
Approved	
Date	17/10/2005
Scale	NTS

Berrigan Shire
Environmental Assessment
Lot 32; DP 778129 Hutsons Rd
Tocumwal NSW
Air Photograph - 1969

Figure No:
A1

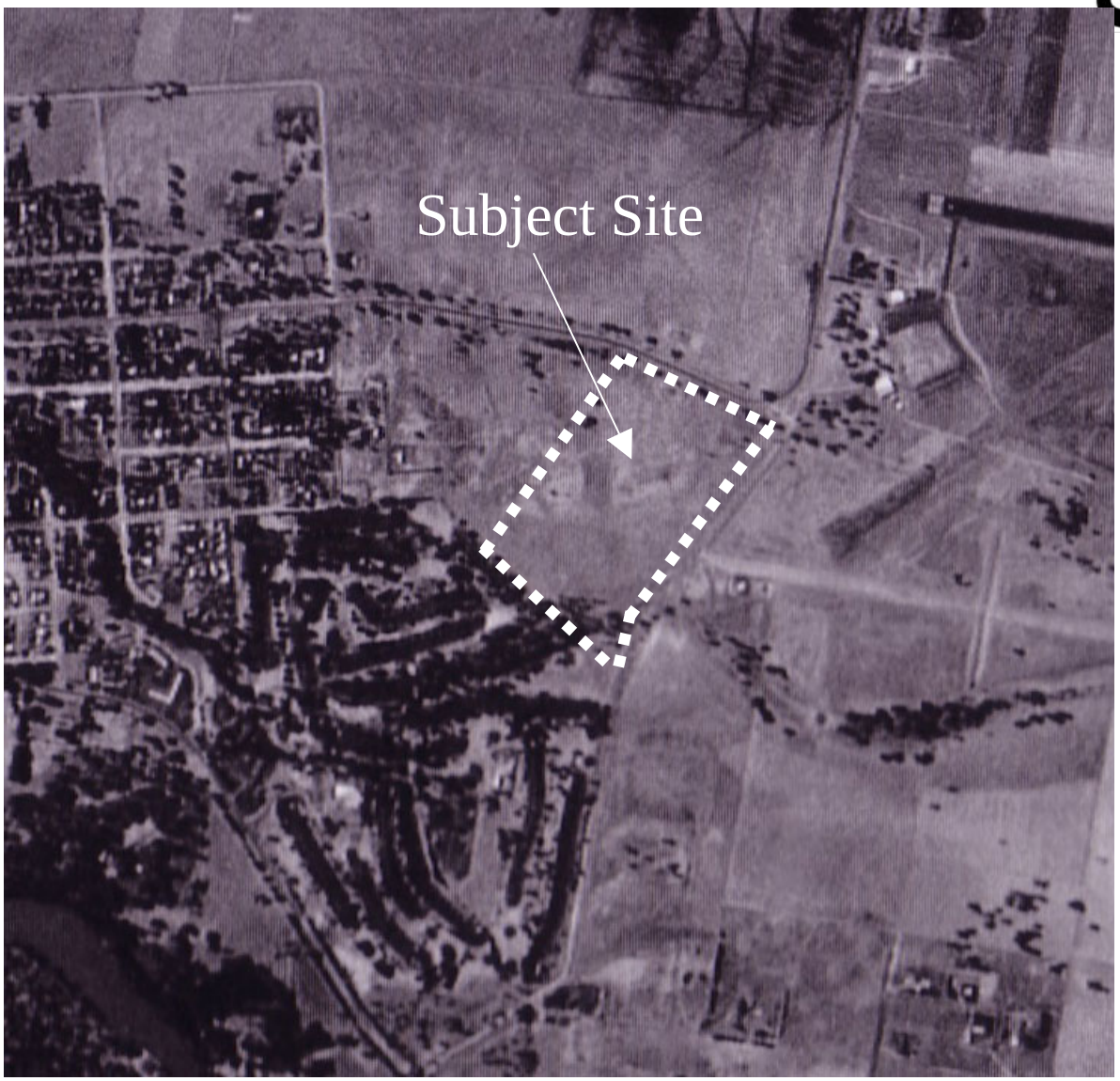
Job No.
E10183/01

N



Coffey Geosciences Pty Ltd ACN 056 335 516	Geotechnical I Resources I Environmental I Technical I Project Management		
Drawn	CWB	**Berrigan Shire** Environmental Assessment Lot 32; DP 778129 Hutsons Rd Tocumwal NSW **Air Photograph - 1976**	Figure No: A2
Approved			
Date	17/10/2005		Job No. E10183/01
Scale	NTS		

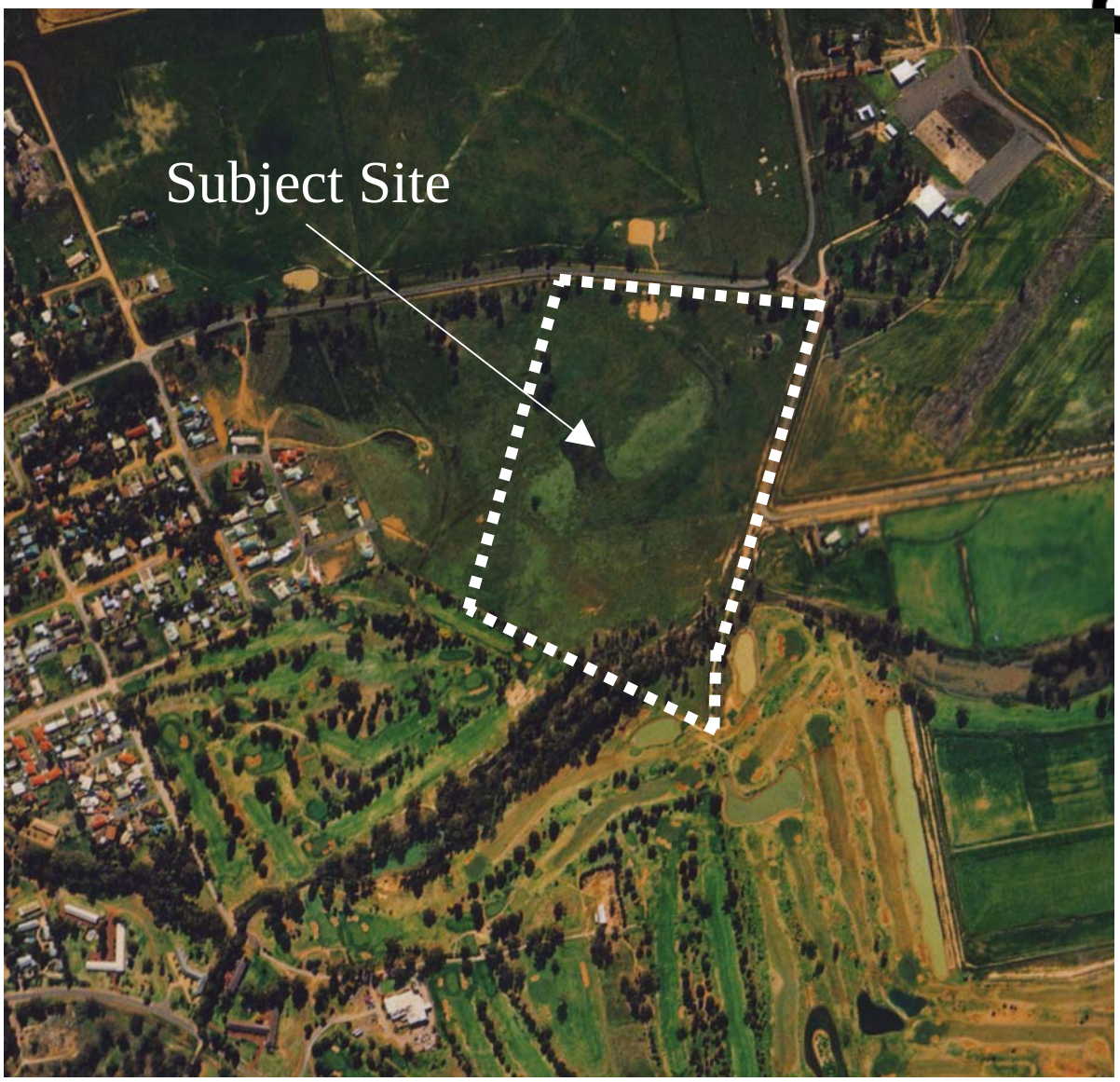
N



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

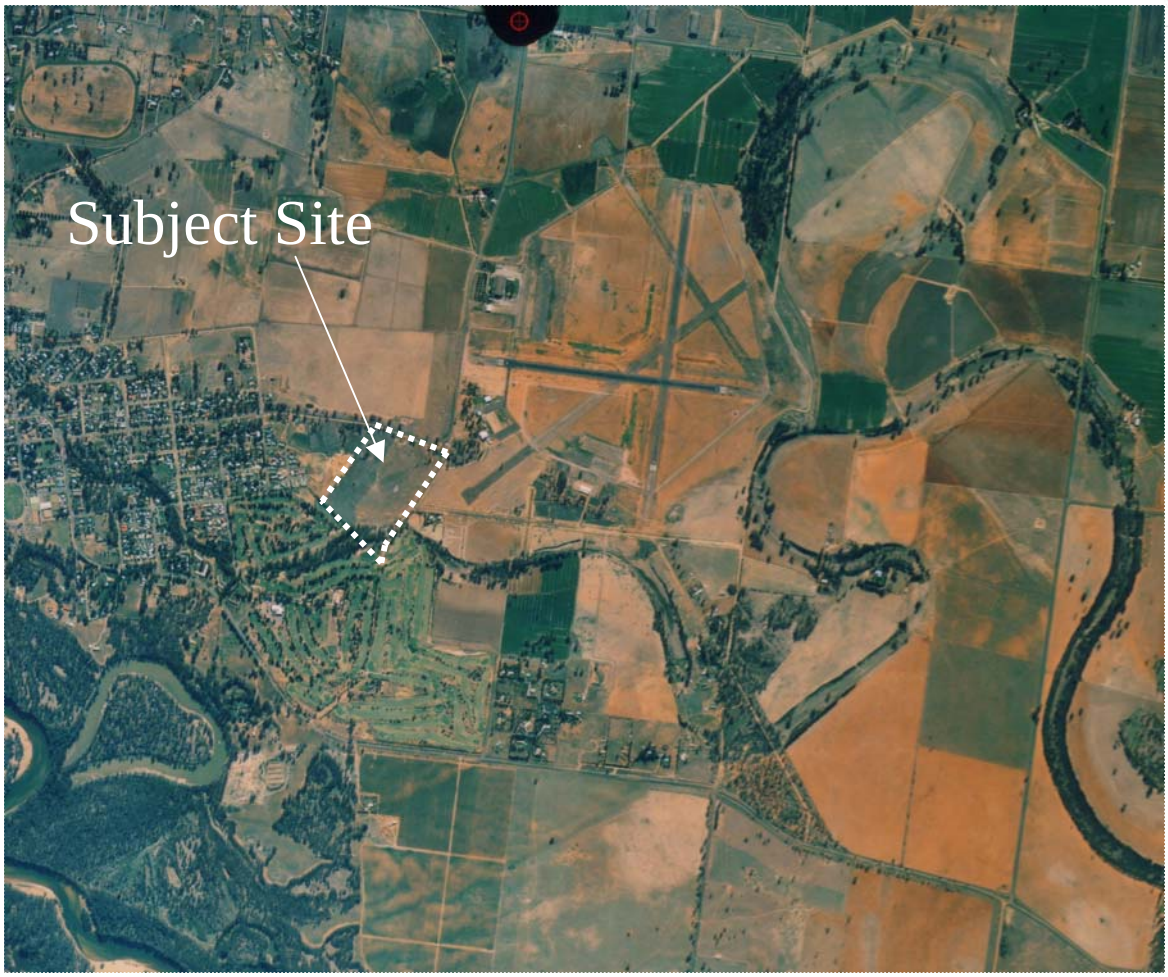
Drawn	CWB	**Berrigan Shire** Environmental Assessment Lot 32; DP 778129 Hutsons Rd Tocumwal NSW **Air Photograph - 1991**	Figure No: A3
Approved			
Date	17/10/2005		
Scale	NTS		Job No. E10183/01

N



Coffey Geosciences Pty Ltd ACN 056 335 516	Geotechnical I Resources I Environmental I Technical I Project Management		
Drawn	CWB	**Berrigan Shire** Environmental Assessment Lot 32; DP 778129 Hutsons Rd Tocumwal NSW **Air Photograph - 1996**	Figure No: A4
Approved			
Date	17/10/2005		
Scale	NTS		Job No. E10183/01

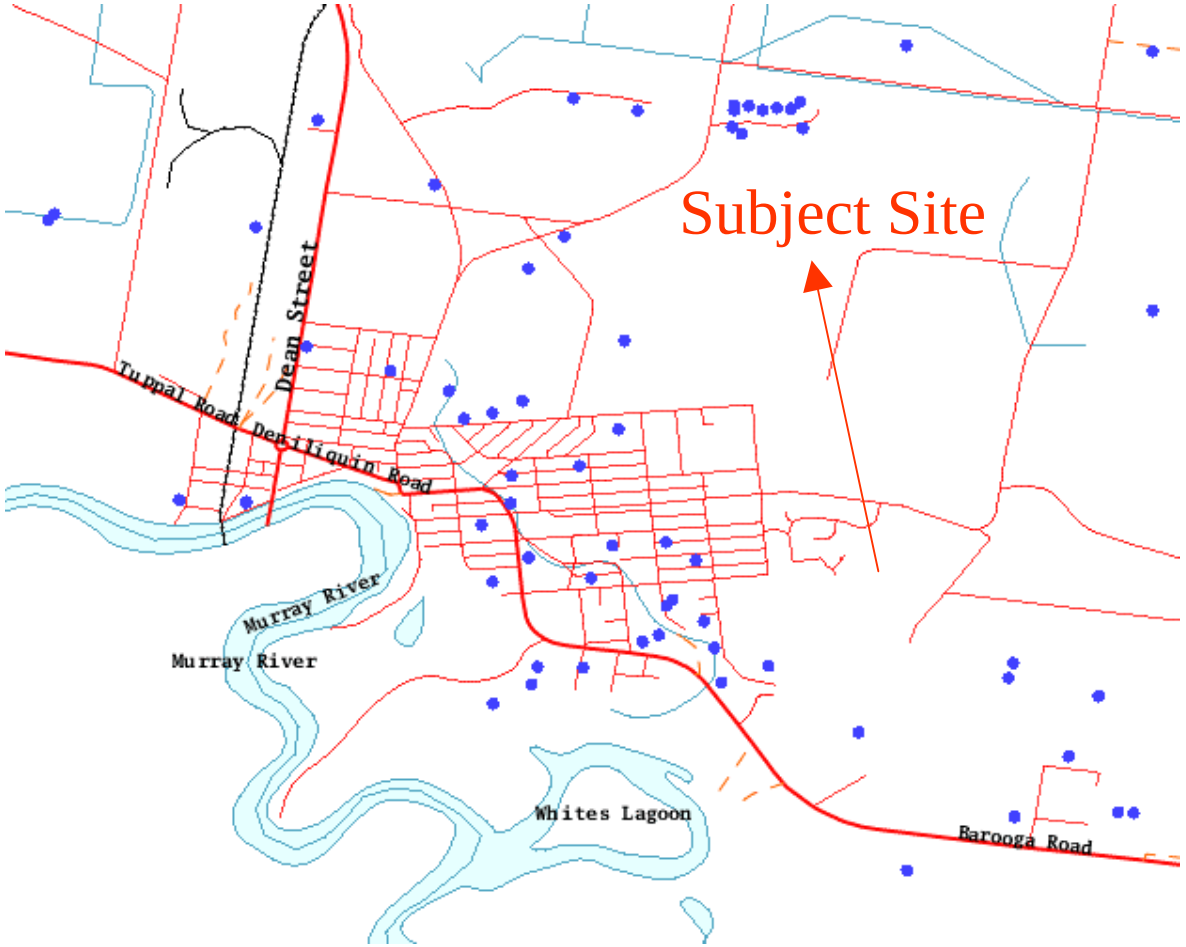
N



Coffey Geosciences Pty Ltd ACN 056 335 516	Geotechnical I Resources I Environmental I Technical I Project Management		
Drawn	CWB	**Berrigan Shire** Environmental Assessment Lot 32; DP 778129 Hutsons Rd Tocumwal NSW **Air Photograph - 2003**	Figure No: A5
Approved			
Date	17/10/2005		
Scale	NTS		Job No. E10183/01

APPENDIX E

GROUNDWATER BORE SEARCH RESULTS



Notes:

Coffey Geosciences Pty Ltd ACN 056 335 516		Geotechnical I Resources I Environmental I Technical I Project Management	
Drawn	CB	Lot 1; DP 802330 & Part Lot 2; DP 8023330 Huston's Road, TOCUMWAL NSW LOCALITTY PLAN	Figure No: E1
Approved			
Date	18.10.2005		
Scale	N.T.S		Job No. E10183/1

APPENDIX F

NATA ENDORSED RESULTS – AMDEL REPORT

REPORT
Explosives
Water & Waste Water
Environmental
Food & Pharmaceuticals
Micro Biological
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Replacement Analytical Report

Replacement for Report no: 152612, issued on: 30 Sep 2005

COFFEYGEOSCIENCES PTY LTD
PO BOX 803
ALBURY

VIC 2640

Contact : **TOBY HOBBS**
Batch Number : **0510882**
Job Ref : **E10183/1**
Sample(s) Received : **23/09/2005**
Replacement Report No : **153781**

Methods:

100 Moisture Content
244 Total Phenolics by UV-Vis (SFA), Dry Weight
404FIMS Mercury by Vapour AAS, Dry Weight
406-MS Elements by ICP-MS, Dry Weight
501-FID Total Petroleum Hydrocarbons, Dry Weight
512-MS Organochlorine Pesticides, Dry Weight
512-MS Polyaromatic Hydrocarbons, Dry Weight
512-MS Polyaromatic Hydrocarbons, mg/kg
512-MS Polyaromatic Hydrocarbons, Surrogates
512/506 Organochlorine Analysis, Surrogates
512MS Organophosphorus Analysis, Surrogates
512MS Organophosphorus compounds, Dry Weight
513P&T C6-C9 (Purge & Trap), Dry Weight
513P&T MAH/TPH, Surrogate

Attached Results Approved by:

John Levvey
Dip.App.Sci (Chemistry)
Teamleader - Metals

Susan Groth
B.Sc. (Chemistry)
Teamleader - Waters

Kumara Dadallage
B.Sc.
Teamleader - Volatiles

Anthony Crane
B.App.Sci. (Environmental)
Laboratory Manager

Daniel Dam
B.App.Sci (Chemistry)
Teamleader - Semi-Volatiles

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herin have been performed in accordance with its terms of accreditation.

NATA ENDORSED DOCUMENT

NATA Accreditation No. 1645 (Chemical Testing) NATA Accreditation No. 14278 (Biological Testing)

**** 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

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Results

Replacement Report No: 153781

	0510882/001 BH1/0.1 SOIL 19/09/05	0510882/003 BH2/0.1 SOIL 19/09/05	0510882/005 BH3/0.1 SOIL 19/09/05	0510882/007 BH4/0.1 SOIL 19/09/05	0510882/009 BH5/0.1 SOIL 19/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	<5.0	<5.0	-	<5.0
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	<20	<20	-	<20
TPH C15 - C28	-	<20	<20	-	<20
TPH C29 - C36	-	<20	<20	-	<20
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	0.02	<0.01	-	0.02
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	7.8	4.9	-	6.8
Cadmium	-	<2.0	<2.0	-	<2.0
Chromium	-	16	21	-	17
Copper	-	7.3	8.3	-	12
Lead	-	17	11	-	25
Nickel	-	6.8	10	-	9.8
Zinc	-	17	22	-	25
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	7.5	9.5	9.7	13.4	15.5
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Results

Replacement Report No: **153781**

	0510882/001 BH1/0.1 SOIL 19/09/05	0510882/003 BH2/0.1 SOIL 19/09/05	0510882/005 BH3/0.1 SOIL 19/09/05	0510882/007 BH4/0.1 SOIL 19/09/05	0510882/009 BH5/0.1 SOIL 19/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	-	126	125	130	-
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	<0.1	<0.1	-	<0.1
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	91.9	104	-	109

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Results

Replacement Report No: 153781

	0510882/011 BH6/0.1 SOIL 19/09/05	0510882/013 BH7/0.1 SOIL 19/09/05	0510882/015 BH8/0.1 SOIL 19/09/05	0510882/017 BH9/0.1 SOIL 19/09/05	0510882/018 BH9/0.5 SOIL 19/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	-	-	-	<5.0
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	-	-	-	<20
TPH C15 - C28	-	-	-	-	<20
TPH C29 - C36	-	-	-	-	<20
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	0.02	-	0.02	0.02
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	7.1	-	5.9	8.4
Cadmium	-	<2.0	-	<2.0	<2.0
Chromium	-	20	-	30	32
Copper	-	11	-	18	20
Lead	-	16	-	20	19
Nickel	-	10	-	23	20
Zinc	-	27	-	51	49
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	20.1	16.0	17.5	21.3	13.9
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Results

Replacement Report No: 153781

	0510882/011 BH6/0.1 SOIL 19/09/05	0510882/013 BH7/0.1 SOIL 19/09/05	0510882/015 BH8/0.1 SOIL 19/09/05	0510882/017 BH9/0.1 SOIL 19/09/05	0510882/018 BH9/0.5 SOIL 19/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	121	126	130	128	-
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	-	-	-	<0.1
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	-	-	-	91.7

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Replacement Report No: 153781

	0510882/019 BH10/0.1 SOIL 19/09/05	0510882/021 BH11/0.1 SOIL 19/09/05	0510882/022 BH11/0.5 SOIL 19/09/05	0510882/023 BH12/0.1 SOIL 19/09/05	0510882/025 BH13/0.1 SOIL 19/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	<5.0	-	-	-
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	<20	-	-	-
TPH C15 - C28	-	<20	-	-	-
TPH C29 - C36	-	<20	-	-	-
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	0.02	0.01	-	-	-
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	7.9	5.2	-	-	-
Cadmium	<2.0	<2.0	-	-	-
Chromium	26	22	-	-	-
Copper	14	11	-	-	-
Lead	18	13	-	-	-
Nickel	15	13	-	-	-
Zinc	32	26	-	-	-
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	13.3	9.1	13.1	10.7	11.4
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Results

Replacement Report No: **153781**

	0510882/019 BH10/0.1 SOIL 19/09/05	0510882/021 BH11/0.1 SOIL 19/09/05	0510882/022 BH11/0.5 SOIL 19/09/05	0510882/023 BH12/0.1 SOIL 19/09/05	0510882/025 BH13/0.1 SOIL 19/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	130	-	-	-	-
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	<0.1	-	-	-
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	103	-	-	-

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Replacement Report No: 153781

	0510882/027 BH14/0.1 SOIL 19/09/05	0510882/029 BH15/0.1 SOIL 19/09/05	0510882/030 BH15/0.5 SOIL 19/09/05	0510882/033 BH17/0.1 SOIL 19/09/05	0510882/035 BH18/0.1 SOIL 19/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	<5.0	-	-	<5.0	<5.0
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	<20	-	-	<20	<20
TPH C15 - C28	<20	-	-	<20	<20
TPH C29 - C36	<20	-	-	<20	<20
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	<0.01	-	-	0.02	<0.01
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	2.1	-	-	7.0	5.0
Cadmium	<2.0	-	-	<2.0	<2.0
Chromium	8.7	-	-	30	18
Copper	3.3	-	-	16	9.0
Lead	4.6	-	-	13	12
Nickel	4.2	-	-	15	9.4
Zinc	10	-	-	33	23
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	8.1	9.1	14.3	17.2	14.9
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Results

Replacement Report No: **153781**

	0510882/027 BH14/0.1 SOIL 19/09/05	0510882/029 BH15/0.1 SOIL 19/09/05	0510882/030 BH15/0.5 SOIL 19/09/05	0510882/033 BH17/0.1 SOIL 19/09/05	0510882/035 BH18/0.1 SOIL 19/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	-	-	-	-	119
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	<0.1	-	-	<0.1	<0.1
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	100	-	-	111	106

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Replacement Report No: 153781

	0510882/037 BH19/0.1 SOIL 19/09/05	0510882/039 BH20/0.1 SOIL 19/09/05	0510882/041 BH21/0.1 SOIL 20/09/05	0510882/043 BH22/0.1 SOIL 20/09/05	0510882/045 BH23/0.1 SOIL 20/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	<5.0	-	-	<5.0
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	<20	-	-	<20
TPH C15 - C28	-	22	-	-	<20
TPH C29 - C36	-	<20	-	-	<20
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	<0.01	-	-	<0.01
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	6.0	-	-	7.5
Cadmium	-	<2.0	-	-	<2.0
Chromium	-	22	-	-	23
Copper	-	11	-	-	11
Lead	-	13	-	-	17
Nickel	-	12	-	-	13
Zinc	-	26	-	-	29
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	17.9	15.5	14.8	15.1	13.8
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Results

Replacement Report No: 153781

	0510882/037 BH19/0.1 SOIL 19/09/05	0510882/039 BH20/0.1 SOIL 19/09/05	0510882/041 BH21/0.1 SOIL 20/09/05	0510882/043 BH22/0.1 SOIL 20/09/05	0510882/045 BH23/0.1 SOIL 20/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	118	117	123	113	126
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	<0.1	-	-	<0.1
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	-	-	-	95.4

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Replacement Report No: 153781

	0510882/047 BH24/0.1 SOIL 20/09/05	0510882/049 BH25/0.1 SOIL 20/09/05	0510882/053 BH27/0.1 SOIL 20/09/05	0510882/055 BH28/0.1 SOIL 20/09/05	0510882/057 BH29/0.1 SOIL 20/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	-	-	-	<5.0
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	-	-	-	<20
TPH C15 - C28	-	-	-	-	21
TPH C29 - C36	-	-	-	-	<20
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	<0.01	-	-	0.01
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	3.4	-	-	13
Cadmium	-	<2.0	-	-	<2.0
Chromium	-	12	-	-	27
Copper	-	5.8	-	-	15
Lead	-	6.4	-	-	24
Nickel	-	7.2	-	-	16
Zinc	-	12	-	-	32
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	10.0	7.9	8.4	8.4	17.3
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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Replacement Report No: 153781

	0510882/047 BH24/0.1 SOIL 20/09/05	0510882/049 BH25/0.1 SOIL 20/09/05	0510882/053 BH27/0.1 SOIL 20/09/05	0510882/055 BH28/0.1 SOIL 20/09/05	0510882/057 BH29/0.1 SOIL 20/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	118	122	116	-	116
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	-	-	-	<0.1
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	-	-	-	121

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Replacement Report No: 153781

	0510882/059 BH30/0.1 SOIL 20/09/05	0510882/061 BH31/0.1 SOIL 20/09/05	0510882/063 BH32/0.1 SOIL 20/09/05	0510882/065 BH33/0.1 SOIL 20/09/05	0510882/067 BH34/0.1 SOIL 20/09/05
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	0.01	-	0.01	-
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	6.9	-	8.5	-
Cadmium	-	<2.0	-	<2.0	-
Chromium	-	27	-	28	-
Copper	-	12	-	15	-
Lead	-	15	-	20	-
Nickel	-	15	-	15	-
Zinc	-	31	-	33	-
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	15.4	12.5	8.1	14.7	14.4
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	122	116	119	118	117

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Replacement Report No: 153781

	0510882/069 BH35/0.1 SOIL 20/09/05	0510882/071 BH36/0.1 SOIL 20/09/05	0510882/073 BH37/0.1 SOIL 20/09/05	0510882/075 BH38/0.1 SOIL 20/09/05	0510882/077 BH39/0.1 SOIL 20/09/05
HYDROCARBONS (C6-C9), DRY WEIGHT					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	-	<5.0	-	-
HYDROCARBONS (TPH), DRY WEIGHT					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	-	-	<20	-	-
TPH C15 - C28	-	-	<20	-	-
TPH C29 - C36	-	-	<20	-	-
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	-	<0.01	<0.01	-
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	-	5.4	4.6	-
Cadmium	-	-	<2.0	<2.0	-
Chromium	-	-	19	13	-
Copper	-	-	9.1	5.4	-
Lead	-	-	12	8.1	-
Nickel	-	-	9.0	6.3	-
Zinc	-	-	20	12	-
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	16.6	22.2	10.2	7.7	14.1
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5

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	0510882/069 BH35/0.1 SOIL 20/09/05	0510882/071 BH36/0.1 SOIL 20/09/05	0510882/073 BH37/0.1 SOIL 20/09/05	0510882/075 BH38/0.1 SOIL 20/09/05	0510882/077 BH39/0.1 SOIL 20/09/05
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	116	116	116	121	120
TOTAL PHENOLS DETERMINATION DRY WEIGHT					
Method: 244 Units: mg/kg					
Total Phenolics	-	-	<0.1	-	-
VOLATILES (PURGE & TRAP), SURROGATE RECOVERIES					
Method: 513P&T Units: % Recovered					
4-Bromoflurobenzene Surrogate Rec.	-	-	100	-	-

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Replacement Report No: 153781

	0510882/079 BH40/0.1 SOIL 20/09/05	0510882/081 BH41/0.1 SOIL 20/09/05	0510882/082 BH41/0.5 SOIL 20/09/05	0510882/083 BH42/0.1 SOIL 20/09/05	0510882/085 BH43/0.1 SOIL 20/09/05
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	0.03	0.02	<0.01	-	0.03
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	10	12	6.7	-	6.8
Cadmium	<2.0	<2.0	<2.0	-	<2.0
Chromium	32	29	30	-	28
Copper	18	13	18	-	16
Lead	22	21	16	-	17
Nickel	16	12	15	-	17
Zinc	30	31	36	-	34
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	17.5	15.3	14.7	10.4	18.1
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	114	123	127	125	120

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Results

Replacement Report No: 153781

	0510882/087 BH44/0.1 SOIL 20/09/05	0510882/088 BH44/0.5 SOIL 20/09/05	0510882/089 BH45/0.1 SOIL 20/09/05	0510882/090 BH45/0.5 SOIL 20/09/05	0510882/091 BH46/0.1 SOIL 20/09/05
MERCURY by VAPOUR-AAS, DRY WEIGHT					
Method: 404FIMS Units: mg/kg					
Mercury	-	-	0.03	-	0.02
METALS by ICP-MS, DRY WEIGHT					
Method: 406-MS Units: mg/kg					
Arsenic	-	-	7.7	-	6.8
Cadmium	-	-	<2.0	-	<2.0
Chromium	-	-	41	-	37
Copper	-	-	23	-	22
Lead	-	-	21	-	19
Nickel	-	-	28	-	24
Zinc	-	-	52	-	44
ORGANOCHLORINE PESTICIDES, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Aldrin	-	-	<0.5	-	-
alpha - BHC	-	-	<0.5	-	-
alpha - Endosulphan	-	-	<0.5	-	-
beta - BHC	-	-	<0.5	-	-
beta - Endosulphan	-	-	<0.5	-	-
Chlordane (a,g,oxy-Chlordane)	-	-	<0.5	-	-
DDD	-	-	<0.5	-	-
DDE	-	-	<0.5	-	-
DDT	-	-	<0.5	-	-
delta - BHC	-	-	<0.5	-	-
Dieldrin	-	-	<0.5	-	-
Endosulphan sulphate	-	-	<0.5	-	-
Endrin	-	-	<0.5	-	-
Endrin Aldehyde	-	-	<0.5	-	-
Heptachlor	-	-	<0.5	-	-
Heptachlorepoxide	-	-	<0.5	-	-
Hexachlorobenzene	-	-	<0.5	-	-
Lindane (gamma BHC)	-	-	<0.5	-	-
Methoxychlor	-	-	<0.5	-	-
ORGANOCHLORINE PESTICIDES, SURROGATE RECOVERIES					
Method: 512/506 Units: % Recovered					
OC Surrogate Recovery	-	-	95.8	-	-
ORGANOPHOSPHORUS COMPOUNDS, DRY WEIGHT					
Method: 512MS Units: mg/kg					
Chlorpyrifos	-	-	<0.5	-	-
Chlorpyrifos Methyl	-	-	<0.5	-	-
Diazinon	-	-	<0.5	-	-
Ethion	-	-	<0.5	-	-

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	0510882/087 BH44/0.1 SOIL 20/09/05	0510882/088 BH44/0.5 SOIL 20/09/05	0510882/089 BH45/0.1 SOIL 20/09/05	0510882/090 BH45/0.5 SOIL 20/09/05	0510882/091 BH46/0.1 SOIL 20/09/05
Fenitrothion	-	-	<0.5	-	-
Fenthion	-	-	<0.5	-	-
Malathion	-	-	<0.5	-	-
Parathion	-	-	<0.5	-	-
Parathion Methyl	-	-	<0.5	-	-
Ronnel	-	-	<0.5	-	-
ORGANOPHOSPHORUS COMPOUNDS, SURROGATE RECOVERIES					
Method: 512MS Units: % Recovered					
OP Surrogate Recovery	-	-	112	-	-
OVEN MOISTURE CONTENT					
Method: 100 Units: % w/w					
Moisture	15.4	15.7	12.4	12.4	13.0
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Total PAH's	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<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
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES					
Method: 512-MS Units: % Recovered					
Pyrene-d10, Surrogate Rec.	129	-	120	-	-

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	0510882/133 DUP A SOIL 21/09/05	0510882/134 DUP B SOIL 21/09/05	0510882/135 DUP C SOIL 21/09/05	0510882/136 DUP D SOIL 21/09/05
MERCURY by VAPOUR-AAS, DRY WEIGHT				
Method: 404FIMS Units: mg/kg				
Mercury	0.03	0.01	0.02	0.01
METALS by ICP-MS, DRY WEIGHT				
Method: 406-MS Units: mg/kg				
Arsenic	7.0	5.1	12	9.7
Cadmium	<2.0	<2.0	<2.0	<2.0
Chromium	25	18	21	26
Copper	18	12	12	16
Lead	20	15	22	23
Nickel	16	12	12	15
Zinc	39	31	27	33
OVEN MOISTURE CONTENT				
Method: 100 Units: % w/w				
Moisture	13.4	14.9	12.4	18.1
POLYAROMATIC HYDROCARBONS, AS RECEIVED				
Method: 512-MS Units: mg/kg				
Total PAH's	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, DRY WEIGHT				
Method: 512-MS Units: mg/kg				
Acenaphthene	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5
Fluoranthene	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	<0.5	<0.5	<0.5
Naphthalene	<0.5	<0.5	<0.5	<0.5
Phenanthrene	<0.5	<0.5	<0.5	<0.5
Pyrene	<0.5	<0.5	<0.5	<0.5
POLYAROMATIC HYDROCARBONS, SURROGATE RECOVERIES				
Method: 512-MS Units: % Recovered				
Pyrene-d10, Surrogate Rec.	-	124	128	-

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Quality Results

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	0510882Q140 DIGEST BLANK Soil 23/09/05	0510882Q141 DIGEST BLANK Soil 23/09/05	0510882Q142 DIGEST BLANK Soil 23/09/05	0510882Q143 QCBlank METHOD BLANK 27/09/05	0510882Q144 QCBlank METHOD BLANK 27/09/05
BTEX/<MAH (PURGE & TRAP), AS RECEIVED					
Method: 513P&T Units: mg/kg					
Benzene	-	-	-	-	<0.2
Ethylbenzene	-	-	-	-	<0.4
meta & para-Xylenes	-	-	-	-	<1.0
ortho-Xylene	-	-	-	-	<0.4
Toluene	-	-	-	-	<0.4
Xylenes	-	-	-	-	<1.4
HYDROCARBONS (C6-C9), AS RECEIVED					
Method: 513P&T Units: mg/kg					
TPH C6 - C9	-	-	-	<5.0	-
MERCURY by VAPOUR-AAS, AS RECEIVED					
Method: 404FIMS Units: mg/kg					
Mercury	<0.01	<0.01	<0.01	-	-
METALS by ICP-MS, AS RECEIVED					
Method: 406-MS Units: mg/kg					
Arsenic	<1.0	<1.0	<1.0	-	-
Cadmium	<1.0	<1.0	<1.0	-	-
Chromium	<1.0	<1.0	<1.0	-	-
Copper	<1.0	<1.0	<1.0	-	-
Lead	<1.0	<1.0	<1.0	-	-
Nickel	<1.0	<1.0	<1.0	-	-
Zinc	<1.0	<1.0	<1.0	-	-

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	0510882Q145 Spike Recovery lab control 27/09/05	0510882Q146 Spike Recovery SPK 27/09/05	0510882Q147 Duplicate 0510882/021 27/09/05	0510882Q148 Duplicate 0510882/027 27/09/05	0510882Q149 Spike Recovery 0510882/027 27/09/05
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
TPH C6 - C9	-	-	<1.0	<1.0	-
Benzene	-	-	<1.0	<1.0	-
Ethylbenzene	-	-	<1.0	<1.0	-
meta & para-Xylenes	-	-	<1.0	<1.0	-
ortho-Xylene	-	-	<1.0	<1.0	-
Toluene	-	-	<1.0	<1.0	-
Xylenes	-	-	<1.0	<1.0	-
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
meta & para-Xylenes	79.0	98.0	-	-	-
ortho-Xylene	73.8	98.6	-	-	-
TPH C6 - C9	85.6	81.9	-	-	92.6
Benzene	82.4	106	-	-	72.7
Ethylbenzene	70.0	101	-	-	71.6
Toluene	87.2	119	-	-	71.3
Xylenes	77.3	98.2	-	-	-

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	0510882Q150 Duplicate 0510882/027 27/09/05	***0510882Q151 Spike Recovery 0510882/027 27/09/05***	***0510882Q152 Spike Recovery Lab Control 27/09/05***	***0510882Q153 Duplicate 0510882/075 27/09/05***	***0510882Q154 Spike Recovery 0510882/075 27/09/05***
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
Mercury	<1.0	-	-	<1.0	-
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Mercury	-	89.0	99.0	-	89.0

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	0510882Q155 Spike Recovery Lab Control 27/09/05	0510882Q160 Spike Recovery Lab Control 27/09/05	0510882Q165 Spike Recovery Lab Control 27/09/05	0510882Q166 Spike Recovery Lab Control 27/09/05	0510882Q167 Duplicate 0510882/027 27/09/05
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
Arsenic	-	-	-	-	10.9
Cadmium	-	-	-	-	5.1
Chromium	-	-	-	-	5.0
Copper	-	-	-	-	<1.0
Lead	-	-	-	-	14.3
Nickel	-	-	-	-	<1.0
Zinc	-	-	-	-	4.3
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Arsenic	-	-	-	99.1	-
Cadmium	-	-	-	102	-
Chromium	-	-	-	105	-
Copper	-	-	-	94.5	-
Lead	-	-	-	94.7	-
Nickel	-	-	-	97.1	-
Zinc	-	-	-	97.7	-
Mercury	99.0	99.0	90.0	-	-

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	0510882Q168 Spike Recovery 0510882/027 27/09/05	0510882Q169 Duplicate 0510882/075 27/09/05	0510882Q170 Spike Recovery 0510882/075 27/09/05	0510882Q175 Spike Recovery Lab Control 27/09/05	0510882Q180 Spike Recovery Lab Control 27/09/05
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
Cadmium	-	<1.0	-	-	-
Copper	-	20.0	-	-	-
Nickel	-	15.5	-	-	-
Zinc	-	10.9	-	-	-
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Arsenic	86.9	-	92.5	101	106
Cadmium	88.6	-	91.2	102	105
Chromium	98.8	-	103	112	100
Copper	94.5	-	105	97.4	103
Lead	86.6	-	92.5	88.1	107
Nickel	99.1	-	108	103	101
Zinc	76.8	-	84.4	97.1	111

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	0510882Q181 QCBlank method blk 27/09/05	0510882Q182 QCBlank method blk 27/09/05	0510882Q183 Spike Recovery lab control 27/09/05	0510882Q184 QCBlank method blk 27/09/05	0510882Q185 Duplicate 0510882/089 27/09/05
ORGANOCHLORINE PESTICIDES, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Aldrin	-	<0.5	-	-	-
alpha - BHC	-	<0.5	-	-	-
alpha - Endosulphan	-	<0.5	-	-	-
beta - BHC	-	<0.5	-	-	-
beta - Endosulphan	-	<0.5	-	-	-
Chlordane	-	<0.5	-	-	-
DDD	-	<0.5	-	-	-
DDE	-	<0.5	-	-	-
DDT	-	<0.5	-	-	-
delta - BHC	-	<0.5	-	-	-
Dieldrin	-	<0.5	-	-	-
Endosulphan sulphate	-	<0.5	-	-	-
Endrin	-	<0.5	-	-	-
Endrin Aldehyde	-	<0.5	-	-	-
Heptachlor	-	<0.5	-	-	-
Heptachlorepoxide	-	<0.5	-	-	-
Hexachlorobenzene	-	<0.5	-	-	-
Lindane	-	<0.5	-	-	-
Methoxychlor	-	<0.5	-	-	-
ORGANOPHOSPHORUS COMPOUNDS, AS RECEIVED					
Method: 512MS Units: mg/kg					
Chlorpyrifos	-	-	-	<0.5	-
Chlorpyrifos Methyl	-	-	-	<0.5	-
Diazinon	-	-	-	<0.5	-
Ethion	-	-	-	<0.5	-
Fenitrothion	-	-	-	<0.5	-
Fenthion	-	-	-	<0.5	-
Malathion	-	-	-	<0.5	-
Parathion	-	-	-	<0.5	-
Parathion Methyl	-	-	-	<0.5	-
Ronnel	-	-	-	<0.5	-
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	-	-	-	-
Acenaphthylene	<0.5	-	-	-	-
Anthracene	<0.5	-	-	-	-
Benz(a)anthracene	<0.5	-	-	-	-
Benzo(a)pyrene	<0.5	-	-	-	-
Benzo(b)fluoranthene	<0.5	-	-	-	-
Benzo(g,h,i)perylene	<0.5	-	-	-	-
Benzo(k)fluoranthene	<0.5	-	-	-	-

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	0510882Q181 QCBlank method blk 27/09/05	0510882Q182 QCBlank method blk 27/09/05	0510882Q183 Spike Recovery lab control 27/09/05	0510882Q184 QCBlank method blk 27/09/05	0510882Q185 Duplicate 0510882/089 27/09/05
Chrysene	<0.5	-	-	-	-
Dibenz(a,h)anthracene	<0.5	-	-	-	-
Fluoranthene	<0.5	-	-	-	-
Fluorene	<0.5	-	-	-	-
Indeno(1,2,3-c,d)pyrene	<0.5	-	-	-	-
Naphthalene	<0.5	-	-	-	-
Phenanthrene	<0.5	-	-	-	-
Pyrene	<0.5	-	-	-	-
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
(a,g,oxy-Chlordane)	-	-	-	-	<1.0
Aldrin	-	-	-	-	<1.0
alpha - BHC	-	-	-	-	<1.0
alpha - Endosulphan	-	-	-	-	<1.0
beta - BHC	-	-	-	-	<1.0
beta - Endosulphan	-	-	-	-	<1.0
DDD	-	-	-	-	<1.0
DDE	-	-	-	-	<1.0
DDT	-	-	-	-	<1.0
delta - BHC	-	-	-	-	<1.0
Dieldrin	-	-	-	-	<1.0
Endosulphan sulphate	-	-	-	-	<1.0
Endrin	-	-	-	-	<1.0
Endrin Aldehyde	-	-	-	-	<1.0
Heptachlor	-	-	-	-	<1.0
Heptachlorepoxide	-	-	-	-	<1.0
Hexachlorobenzene	-	-	-	-	<1.0
Lindane (gamma BHC)	-	-	-	-	<1.0
Methoxychlor	-	-	-	-	<1.0
Chlorpyrifos	-	-	-	-	<1.0
Chlorpyrifos Methyl	-	-	-	-	<1.0
Diazinon	-	-	-	-	<1.0
Ethion	-	-	-	-	<1.0
Fenitrothion	-	-	-	-	<1.0
Fenthion	-	-	-	-	<1.0
Malathion	-	-	-	-	<1.0
Parathion	-	-	-	-	<1.0
Parathion Methyl #	-	-	-	-	<1.0
Ronnel	-	-	-	-	<1.0
Acenaphthene	-	-	-	-	<1.0
Acenaphthylene	-	-	-	-	<1.0
Anthracene	-	-	-	-	<1.0
Benz(a)anthracene	-	-	-	-	<1.0

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Benzo(a)pyrene	-	-	-	-	<1.0
Benzo(b)fluoranthene	-	-	-	-	<1.0
Benzo(g,h,i)perylene	-	-	-	-	<1.0
Benzo(k)fluoranthene	-	-	-	-	<1.0
Chrysene	-	-	-	-	<1.0
Dibenz(a,h)anthracene	-	-	-	-	<1.0
Fluoranthene	-	-	-	-	<1.0
Fluorene	-	-	-	-	<1.0
Indeno(1,2,3-c,d)pyrene	-	-	-	-	<1.0
Naphthalene	-	-	-	-	<1.0
Phenanthrene	-	-	-	-	<1.0
Pyrene	-	-	-	-	<1.0
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Aldrin	-	-	93.8	-	-
alpha - BHC	-	-	72.5	-	-
alpha - Endosulphan	-	-	93.8	-	-
beta - BHC	-	-	92.5	-	-
beta - Endosulphan	-	-	95.0	-	-
Chlordane (a,g,oxy-Chlordane)	-	-	95.6	-	-
DDD	-	-	102	-	-
DDE	-	-	93.8	-	-
DDT	-	-	87.5	-	-
delta - BHC	-	-	100	-	-
Dieldrin	-	-	86.2	-	-
Endosulphan sulphate	-	-	101	-	-
Endrin	-	-	88.8	-	-
Endrin Aldehyde	-	-	96.2	-	-
Heptachlor	-	-	86.2	-	-
Heptachlorepoxide	-	-	85.0	-	-
Hexachlorobenzene	-	-	88.8	-	-
Lindane (gamma BHC)	-	-	83.8	-	-
Methoxychlor	-	-	97.5	-	-
Chlorpyrifos	-	-	98.8	-	-
Chlorpyrifos Methyl	-	-	86.2	-	-
Diazinon	-	-	92.5	-	-
Ethion	-	-	98.8	-	-
Fenitrothion	-	-	88.8	-	-
Fenthion	-	-	98.8	-	-
Malathion	-	-	105	-	-
Parathion	-	-	91.2	-	-
Parathion Methyl	-	-	80.0	-	-

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Quality Results

Replacement Report No: 153781

	0510882Q181 QCBlank method blk 27/09/05	0510882Q182 QCBlank method blk 27/09/05	0510882Q183 Spike Recovery lab control 27/09/05	0510882Q184 QCBlank method blk 27/09/05	0510882Q185 Duplicate 0510882/089 27/09/05
Ronnel	-	-	93.8	-	-
Acenaphthene	-	-	104	-	-
Anthracene	-	-	106	-	-
Benz(a)anthracene	-	-	95.0	-	-
Benzo(a)pyrene	-	-	102	-	-
Benzo(b)fluoranthene	-	-	100	-	-
Benzo(g,h,i)perylene	-	-	104	-	-
Benzo(k)fluoranthene	-	-	95.0	-	-
Chrysene	-	-	98.8	-	-
Dibenz(a,h)anthracene	-	-	105	-	-
Fluoranthene	-	-	93.8	-	-
Fluorene	-	-	101	-	-
Indeno(1,2,3-c,d)pyrene	-	-	104	-	-
Naphthalene	-	-	108	-	-
Phenanthrene	-	-	101	-	-
Pyrene	-	-	98.8	-	-

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	0510882Q190 QCBlank method blk 28/09/05	0510882Q191 Spike Recovery lab control 28/09/05	0510882Q192 QCBlank method blk 28/09/05	0510882Q193 Spike Recovery 0510882/088 28/09/05	0510882Q194 QCBlank method blk 28/09/05
POLYAROMATIC HYDROCARBONS, AS RECEIVED					
Method: 512-MS Units: mg/kg					
Acenaphthene	<0.5	-	<0.5	-	<0.5
Acenaphthylene	<0.5	-	<0.5	-	<0.5
Anthracene	<0.5	-	<0.5	-	<0.5
Benz(a)anthracene	<0.5	-	<0.5	-	<0.5
Benzo(a)pyrene	<0.5	-	<0.5	-	<0.5
Benzo(b)fluoranthene	<0.5	-	<0.5	-	<0.5
Benzo(g,h,i)perylene	<0.5	-	<0.5	-	<0.5
Benzo(k)fluoranthene	<0.5	-	<0.5	-	<0.5
Chrysene	<0.5	-	<0.5	-	<0.5
Dibenz(a,h)anthracene	<0.5	-	<0.5	-	<0.5
Fluoranthene	<0.5	-	<0.5	-	<0.5
Fluorene	<0.5	-	<0.5	-	<0.5
Indeno(1,2,3-c,d)pyrene	<0.5	-	<0.5	-	<0.5
Naphthalene	<0.5	-	<0.5	-	<0.5
Phenanthrene	<0.5	-	<0.5	-	<0.5
Pyrene	<0.5	-	<0.5	-	<0.5
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Acenaphthene	-	102	-	90.0	-
Acenaphthylene	-	95.0	-	85.0	-
Anthracene	-	106	-	95.0	-
Benz(a)anthracene	-	96.2	-	83.8	-
Benzo(a)pyrene	-	97.5	-	86.2	-
Benzo(b)fluoranthene	-	91.2	-	72.5	-
Benzo(g,h,i)perylene	-	88.8	-	77.5	-
Benzo(k)fluoranthene	-	110	-	105	-
Chrysene	-	105	-	86.2	-
Dibenz(a,h)anthracene	-	78.8	-	-	-
Fluoranthene	-	114	-	93.8	-
Fluorene	-	100	-	85.0	-
Indeno(1,2,3-c,d)pyrene	-	118	-	98.8	-
Naphthalene	-	101	-	91.2	-
Phenanthrene	-	102	-	86.2	-
Pyrene	-	116	-	100	-

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Quality Results

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	0510882Q195 Spike Recovery lab control 28/09/05	0510882Q196 Spike Recovery lab control 28/09/05	0510882Q197 Spike Recovery 0510882/037 28/09/05	0510882Q198 Duplicate 0510882/039 28/09/05	0510882Q199 Duplicate 0510882/057 28/09/05
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
Acenaphthene	-	-	-	<1.0	<1.0
Acenaphthylene	-	-	-	<1.0	<1.0
Anthracene	-	-	-	<1.0	<1.0
Benz(a)anthracene	-	-	-	<1.0	<1.0
Benzo(a)pyrene	-	-	-	<1.0	<1.0
Benzo(b)fluoranthene	-	-	-	<1.0	<1.0
Benzo(g,h,i)perylene	-	-	-	<1.0	<1.0
Benzo(k)fluoranthene	-	-	-	<1.0	<1.0
Chrysene	-	-	-	<1.0	<1.0
Dibenz(a,h)anthracene	-	-	-	<1.0	<1.0
Fluoranthene	-	-	-	<1.0	<1.0
Fluorene	-	-	-	<1.0	<1.0
Indeno(1,2,3-c,d)pyrene	-	-	-	<1.0	<1.0
Naphthalene	-	-	-	<1.0	<1.0
Phenanthrene	-	-	-	<1.0	<1.0
Pyrene	-	-	-	<1.0	<1.0
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
Acenaphthene	102	98.8	101	-	-
Acenaphthylene	104	90.0	97.5	-	-
Anthracene	109	93.8	109	-	-
Benz(a)anthracene	108	87.5	98.8	-	-
Benzo(a)pyrene	102	82.5	96.2	-	-
Benzo(b)fluoranthene	110	85.0	96.2	-	-
Benzo(g,h,i)perylene	102	110	100	-	-
Benzo(k)fluoranthene	100	83.8	101	-	-
Chrysene	104	86.2	101	-	-
Dibenz(a,h)anthracene	104	104	97.5	-	-
Fluoranthene	106	86.2	101	-	-
Fluorene	108	91.2	104	-	-
Indeno(1,2,3-c,d)pyrene	101	105	92.5	-	-
Naphthalene	104	90.0	98.8	-	-
Phenanthrene	109	92.5	110	-	-
Pyrene	104	85.0	101	-	-

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Quality Results

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	0510882Q200 QCBlank METHOD BLANK 27/09/05	0510882Q201 Spike Recovery LAB CONTROL 27/09/05	0510882Q206 Spike Recovery 0510882/033 27/09/05	0510882Q207 Duplicate 0510882/039 27/09/05	0510882Q208 Duplicate 0510882/057 27/09/05
HYDROCARBONS, AS RECEIVED					
Method: 501-FID Units: mg/kg					
TPH C10 - C14	<20	-	-	-	-
TPH C15 - C28	<20	-	-	-	-
TPH C29 - C36	<20	-	-	-	-
QC RESULTS - DUPLICATES					
Relative Percent Difference, %					
TPH C10 - C14	-	-	-	<1.0	<1.0
TPH C15 - C28	-	-	-	27.5	20.0
TPH C29 - C36	-	-	-	<1.0	<1.0
QC RESULTS - SPIKED SAMPLES					
Percent Recovery, %					
TPH C10 - C14	-	91.2	92.8	-	-
TPH C15 - C28	-	101	106	-	-
TPH C29 - C36	-	99.2	99.2	-	-

Quality Results provided in this report are for laboratory Quality Control purposes.

Sample Comments:

0510882/001	Surrogate recovery for some semivolatile analysis (TPH, PAH, OC, OP, PCB etc) fell outside the laboratory guideline limits. Acceptance limits were acheived for all other QC in relation to this batch (Lab Control, Sample Spike and Duplicates). This comment applied to all samples where applicable.
0510882/039	Surrogate recovery for some volatile analysis (volatiles, C6-C9, BTEX, MAH etc) fell outside the laboratory guideline limits. Repeat analysis confirmed the surrogate recovery failed due to poor sample matrix. Acceptance limits were acheived for all other QC in relation to this batch (Lab Control, Sample Spike and Duplicates).