Cardno LanePiper
Shaping the Future

Our Ref: 212163.1Report05.3

19 March 2014

Ashurst
Level 26, 180 William St
Melbourne, VIC 3000

Attention: Robert Jamieson

Dear Rob,

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trading as Cardno Lane Piper
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Privileged & Confidential

Surface Soil Assessment - 4WD High Mound, Fiskville Training College

1 INTRODUCTION

Cardno Lane Piper was engaged by Ashurst ("the Client"), to undertake an inspection and limited surface sampling of an earthen mound in the driver education training practice area for drills, DET PAD, (Feature 21a) also known as 4WD training area at the CFA Fiskville Training College as per our variation dated 17 June 2013 (212163.1Variation05.1) and accepted by Ashurst on 18 June 2013. Refer to Figure 1 and 2 in Appendix A.

This work arose from recent anecdotal information stating that the highest mound in the 4WD training area ("High Mound") includes soil derived from sediments excavated from the bed of Lake Fiskville and therefore are potentially contaminated. In our report titled Site History Review (Cardno Lane Piper, 2014a) of Fiskville Training College we had also recommended investigation of the DET PAD, (Feature 21a) prior to receipt of this information.

CFA currently use the High Mound for 4WD driver training courses and requested an initial assessment of the potential for surface soil to be contaminated in this area. Therefore, the purpose of investigation is to:

- Assess the High Mound in the 4WD training area for surface soil contamination and or visible asbestos originating from previous site activities.
- Recommendations for managing potential health and safety risks for users of the soil mound.

The entire driver training area has not been assessed as part of this investigation. The scope of works presented in the following section is limited to the surface soils of the High Mound in the 4WD training area. There are other smaller soil mounds present in the 4WD training area and they are not part of this investigation.

2 SCOPE OF WORK

Cardno Lane Piper carried out the following tasks in order to satisfy the purpose and objectives of this 4WD High Mound assessment.

Site Inspection & Use

- Confirmed the site feature and checked for visible evidence of asbestos.
- Visual checked for evidence of different soil types and evidence of site cutting and filling or placement of solid wastes.

Sampling & Testing

- Surface soil sampling of the High Mound at 10 locations.
- Laboratory testing of all soil samples for PFOS, PFOA, TPH/BTEX and Metals (Arsenic, Cadmium, Chromium, Cobalt, Lead, Mercury, Manganese, Nickel, Vanadium, Zinc) (by a NATA accredited laboratory).

Reporting

- Prepared this letter report to document the results.

3 INVESTIGATION SCOPE AND METHOD

The soil sampling fieldwork was conducted on 19 June 2013. The fieldwork was undertaken by an experienced environmental scientist in accordance with the agreed scope of work and using methods set out in the Cardno Lane Piper Integrated Management System which conforms to industry standard of practice. The scope and method of the work is summarised in Table 3-1 and the sampling locations are shown on Figure 2, Appendix A.

Table 3-1: Soil Sampling & Testing Scope & Method

Activity	Details
Sample collection method	Surface samples were collected using a stainless steel hand trowel. This is considered sufficient for the scope and purpose of this limited investigation. However, other sampling technique and further details regarding soil sampling methodology may be required if further assessment of DET PAD is to be conducted. Soil samples were stored in glass containers provided by the laboratory. All samples were labelled with an indelible marker pen on water resistant labels attached to the sample jars.
Soil Logging & Records	The records of the description of soils encountered, the samples collected including depths and related observations are presented in Appendix C. PID field screening was undertaken using a headspace method (soil placed into a disposable snap-lock bag, left to reach equilibrium and the PID was inserted through the bag to take a reading). A new bag was used for each sample.
Decontamination Procedure	Reusable soil sampling equipment (stainless steel trowel) was rinsed with Decon 90 and deionised water prior to the collection of each sample.
Sample Preservation and Transport	Samples were stored on ice, in an esky while on-site and in transit to the laboratory under Chain of Custody documentation.
Laboratory Testing	10 samples were analysed for PFOS/PFOA, 6:2FtS, metals (Arsenic, Cadmium, Chromium, Cobalt, Lead, Mercury, Manganese, Nickel, Vanadium, Zinc) and TPH/BTEX.
QA/QC	As this investigation is limited in scope and only for preliminary screening purpose, QA/QC procedures were not undertaken. However, the data collected is considered to be reliable and repeatable as the analytical results reported were generally

Activity	Details
	comparable to each other (especially SS88 to SS91). Furthermore, the Interpretive Quality Control (QCI) report from ALS presented in Appendix E indicated all laboratory internal QA/QC samples report results within acceptable ranges, except for three matrix spikes samples. The entire 4WD training PAD (Feature 21a) is recommended for further assessment and detailed QA/QC should be conducted as part of the future assessment.

4 ASSESSMENT CRITERIA

The following sections discuss the sources of assessment criteria adopted for this investigation having regard to the ongoing use of the High Mound for 4WD training.

The *SEPP Prevention and Management of Contamination of Land* (2002) designate protected beneficial uses according to the current or proposed use of the land. The High Mound is part of the 4WD driver training course which involves trainees and instructors using this particular area of the site, the land use(s) applied are:

- Commercial and Industrial

This report has been completed following the general requirements of the ASC NEPM (1999). The ASC NEPM was amended in 2013 and came formally into operation on 16 May 2013. The ASC NEPM is implemented in Victoria through State Environment Protection Policy (SEPP). EPA Victoria has directed that all current investigations can use the 1999 NEPM during the transition period of 12 months before full implementation of the amended ASC NEPM (2013) in May 2014. This phase of the assessment was completed prior to the amended ASC NEPM becoming operational and the report has been completed prior to May 2014.

Therefore the beneficial uses and assessment criteria commensurate with these uses are:

- **NEPM Ecological Investigation Levels (EIL):** to assess potential risks to natural ecosystem.
- **NEPM Health Investigation Levels (HIL F):** Commercial/Industrial. It includes premises such as shops and offices as well as factories and industrial sites.

In October 2013, a re-evaluation the assessment criteria for TPH, BTEX and PFC was conducted in order to select the most appropriate in the context for FTC. This is presented as the document in Appendix H of Cardno Lane Piper's *Targeted Soil Assessment* report (Cardno Lane Piper, 2014b).

Where the relevant Australian guidelines do not include a criterion for a particular chemical, a suitable criterion can be sourced from authorities in other jurisdictions. Where these levels do not offer a value for a particular parameter, alternative and equivalent sources of investigation levels are used, including:

- US EPA (2009) – Soil Screening Levels for Perfluorooctanoic Acid (PFOA) (16 mg/kg) and Perfluorooctane Sulfonate (PFOS) (6 mg/kg). These are for a residential exposure setting.
- Environment Agency (2004) – Soil 'Practical No Effect Concentration' (PNEC) for PFOS (37 µg/kg or 0.037 mg/kg). This is an ecological criterion as the $PNEC_{soil}$ for earthworm is adopted as the criteria for the soil medium.

In the absence of available criteria for 6:2 Fluorotelomer (FtS), adopting the conservative approach, the lowest of the available PFC criteria (which is PFOS) is adopted for 6:2 FtS for comparison purpose only.

The Canadian Council of Ministers of the Environment (CCME) criteria for benzene, toluene, ethyl benzene, xylene (BTEX) and Total Petroleum Hydrocarbons (TPH) fractions were adopted as consideration is given to both human health[1] and environmental concerns[2]. The specific CCME criteria adopted are:

- CCME Canada-wide Standard for Petroleum Hydrocarbons (PHC) in Soil Guidance document (2008): to assess potential risk of TPH to human health and the environment for a commercial/industrial site.
- CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (2004a, b, c and d) to assess potential risk of BTEX to human health and the environment for a commercial/industrial site.

There is no ecological criterion available for total chromium and therefore, NEPM EIL criterion for chromium VI is adopted for comparison only.

The ecological and human health "Investigation levels" are not intended to be interpreted as "maximum permissible levels", "clean up levels" or "safe levels", rather, they are levels at which further investigation or assessment should be undertaken to provide assurance that unacceptable contamination does not occur. Subsequent assessment on a site-specific basis often results in higher levels being acceptable. The initial screening levels for determining the "contamination status of land" are generally the most conservative of these levels, which are the EIL.

5 RESULTS

5.1 Site Inspection

The site inspection yielded the following observations:

- The High Mound measures approximately 9 m in length, 8 m in width and 6 m in height above the surrounding land.
- No visible asbestos containing materials were observed on the surface soil at the High Mound.
- The surface soil on the northern side of the High Mound consisted of silty clayey soil with high plasticity and minor gravels. This is consistent with the sediment sampled by Cardno Lane Piper in Lake Fiskville (see the surface water and sediment report (Cardno Lane Piper, 2014c)).
- The surface soil on the southern side of the High Mound consisted of clayey sandy soil.
- Refusal on rock boulders occurred at some locations.
- Small fragments of plastic pipe and building rubble including gravels, brick and concrete fragments were visible at the surface.

The photos of the High Mound taken during the inspection are presented in Appendix D.

[1] Human Health: Includes ingestion of soil, dermal exposure to soil, inhalation of dusts, vapour intrusion and uptake in produce consumed.
[2] Environmental considerations in deriving CCME criteria include soil contact, soil ingestion, nutrient cycling and contamination of groundwater.

5.2 Laboratory Testing

The results of laboratory analysis are presented in NATA certified laboratory reports with Chain of Custody records in Appendix E. The results have been compared against adopted assessment criteria and presented in Appendix B.

6 DISCUSSION OF RESULTS

The interpretation of laboratory results indicates that:

- All samples analysed for perfluoro compounds (PFC) including the key contaminant PFOS and PFOA reported detectable concentrations outlined in Table 6-1 below.

Table 6-1: Results for PFOS and PFOA compared to screening criteria

Key Contaminant of Concern	Soil Investigation Levels (mg/kg)	Results Range (mg/kg)
PFOS	6[1]	0.003 - 0.39
	0.037[2]	
PFOA	16[1]	0.007 - 0.012

1. US EPA (2009) Soil Screening Levels for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) - human health criteria.
2. Environment Agency (2004) Practical No Effect Concentration for PFOS – ecological criteria.

- Three samples (SB85, SB86 and SB87) analysed for TPH reported detectable concentrations of TPH C_{10}-C_{40} above laboratory limits of reporting (LOR), however the results were below the 2008 CCME criteria for a commercial/industrial site for the protection of ecosystem and human health. All other samples analysed for TPH reported concentrations below the laboratory LORs.
- All samples analysed for BTEX and naphthalene reported concentrations below laboratory LORs.
- All samples analysed for vanadium reported concentrations above the adopted assessment criteria for Ecological Investigation Levels (EIL), as noted in Table 1, Appendix B.
- All samples reported total chromium results above NEPM EIL criterion for chromium VI but as there are no known sources of chromium VI at Fiskville Training College; chromium III is likely to be the dominant species of chromium present on-site. The values reported for total chromium in this investigation is generally within the range of natural background levels for chromium in basaltic soil.
- The assessment of the significance of any soil contamination in the 4WD training area should also take into account occupation exposure factors common to any situation where persons are exposed to soil. These include the duration of the activity where persons are potentially exposed to soil (or mud).
- The key pathway of exposure for workers and trainees in this area is inhalation of dust and dermal (skin) contact. It is considered that:
  - Dust inhalation (in dry weather) can be managed using dust suppression techniques such as wetting down the area.
  - Dermal contact can be minimised if normal Occupational Health and Safety procedures are adopted for contact with soils, grit and mud. This includes use of appropriate PPE

such as glasses, gloves, long sleeved clothing during training and vehicle wash down times.

- While it is possible for stormwater runoff from the High Mound to join overland flow towards Lake Fiskville, it seem unlikely that suspended solids would enter the lake given the low slope and grassed areas. In any event the soil in the mound has a similar contamination profile to the sediment in the lake so there is no different in impact from existing sediment. Further, the lake is proposed to be remediated. It is considered unlikely that surface run-off from the High Mound would reach Dam 4 as this is across-slope.
- A Site Contamination Management Plan has been recommended in other reports by Cardno Lane Piper for implementation at the Fiskville Training College.

7 CONCLUSIONS

In summary, the results of the surface soil inspection and testing of the High Mound indicate that:

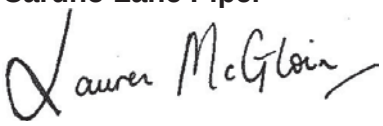
- The surface soil observed on the day of inspection did not contain visible asbestos cement materials.
- The surface soil observations indicate that the soil texture of the northern side of the High Mound is consistent with that of a lake sediment, with the soil type encountered generally consisting of silty clay with high plasticity as reported in the surface water and sediment report (Cardno Lane Piper, 2014c).
- The contamination levels do not exceed the assessments criteria applied which are relevant to a commercial or industrial land use where exposure to soil and dust would be similar to fire-fighting training. Therefore the contamination reported does not pose any significant risk for the continued use of the High Mound for 4WD training.
- This assessment addresses only the High Mound in the 4WD training area. The Site History Review report (Cardno Lane Piper, 2014a) by Cardno Lane Piper recommended that the entire driver training area should be assessed for contamination.

8 RECOMMENDATIONS

It is recommended that:

1. Exposure of trainees to soil (dirt and mud) and any potential contaminants contained within should always be minimised by the use of standard OHS practices including the use of PPE.
2. The entire area of the DET PAD (Feature 21a) or 4WD training facility at Fiskville should be assessed for contamination in accordance with the recommendations of the Cardno Lane Piper Site History Review (Cardno Lane Piper, 2014a).

Yours faithfully
Cardno Lane Piper



Lauren McGloin
Senior Environmental Scientist

Approved:

Anthony P. Lane
Senior Principal

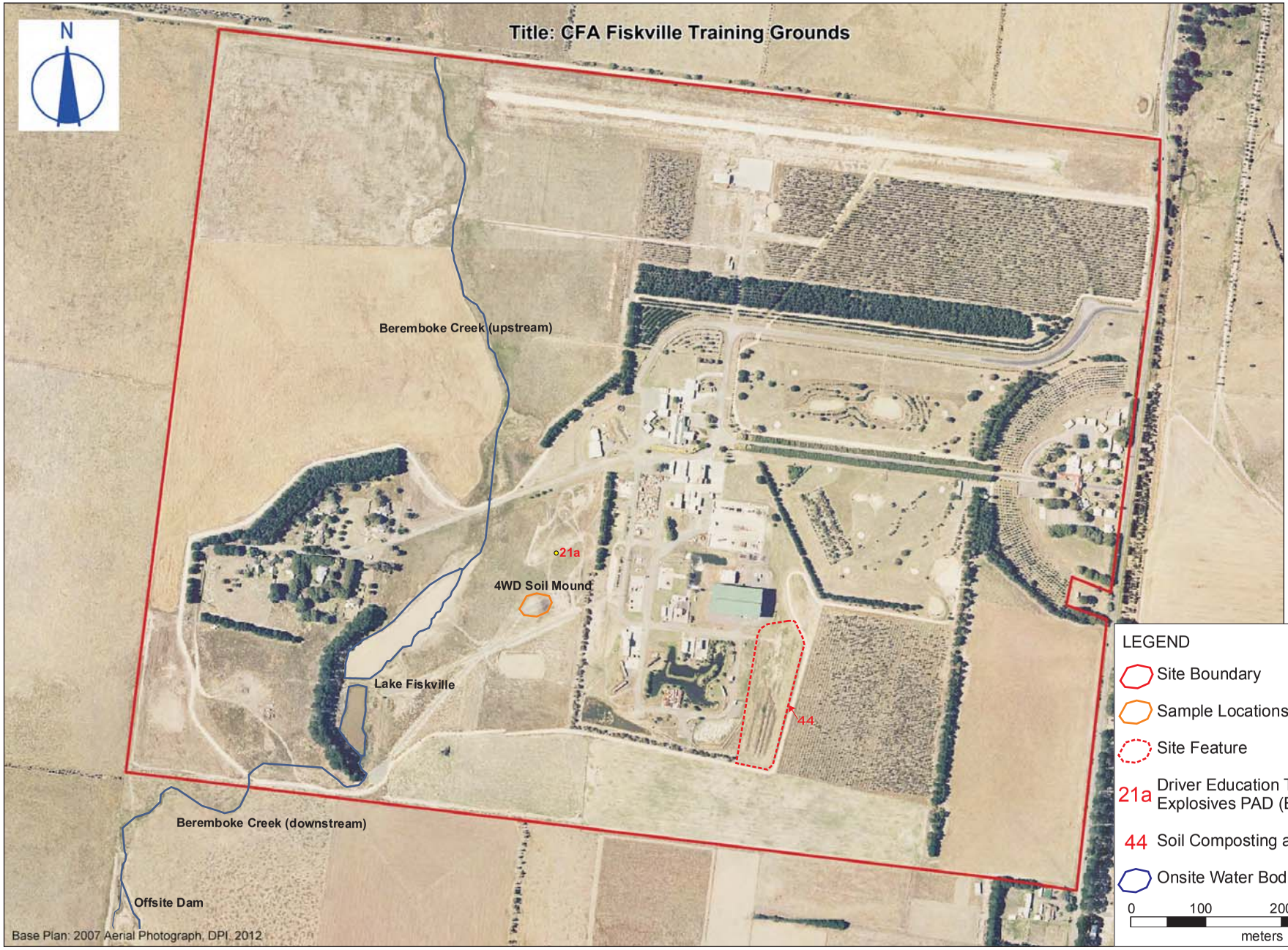
REFERENCES

1. Environment Agency (2004) Environmental Risk Evaluation Report for Perfluorooctanesulphonate (PFOS), Environment Agency, United Kingdom.
2. Canadian Council of Ministers of the Environment (2004a) Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, Benzene, 2004.
3. Canadian Council of Ministers of the Environment (2004b) Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, Xylenes, 2004.
4. Canadian Council of Ministers of the Environment (2004c) Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, Toluene, 2004.
5. Canadian Council of Ministers of the Environment (2004d) Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, Ethylbenzene, 2004.
6. Canadian Council of Ministers of the Environment (2008) Canada-wide Standard for Petroleum Hydrocarbons (PHC) in Soil, User Guidance, PN 1398, January 2008.
7. Cardno Lane Piper (2014a). Site History Review, Fiskville Training College, 4549 Geelong – Ballan Road, Fiskville, Victoria. March 2014.
8. Cardno Lane Piper (2014b). Targeted Soil Assessment. Fiskville Training College, 4549 Geelong – Ballan Road, Fiskville, Victoria. March 2014.
9. Cardno Lane Piper (2014c). Surface Water and Sediment Contamination Assessment. Fiskville Training College, 4549 Geelong – Ballan Road, Fiskville, Victoria. March 2014.
10. US EPA (2009) Soil Screening Levels for Perfluooctanaoic Acid (PFOA) and Perfluorooctyl Sulfonate (PFOS), EPA Region 4, Memorandum.
11. Warne M. (2010) Review of the Appropriateness of the Canadian Petroleum Hydrocarbon Country Wide Standards in Soil for Incorporation in to the Australian National Environment Protection (Assessment of Site Contamination) Measure and Recommended Ecological Investigation Levels, viewed 10 October 2013, http://www.scew.gov.au/sites/www.scew.gov.au/files/pages/9b067155-4726-423b-989b-5263263b9c16/files/review-appropriateness-canadian-petroleum-hydrocarbon-country-wide-standards-soil-incorporation-asc.pdf

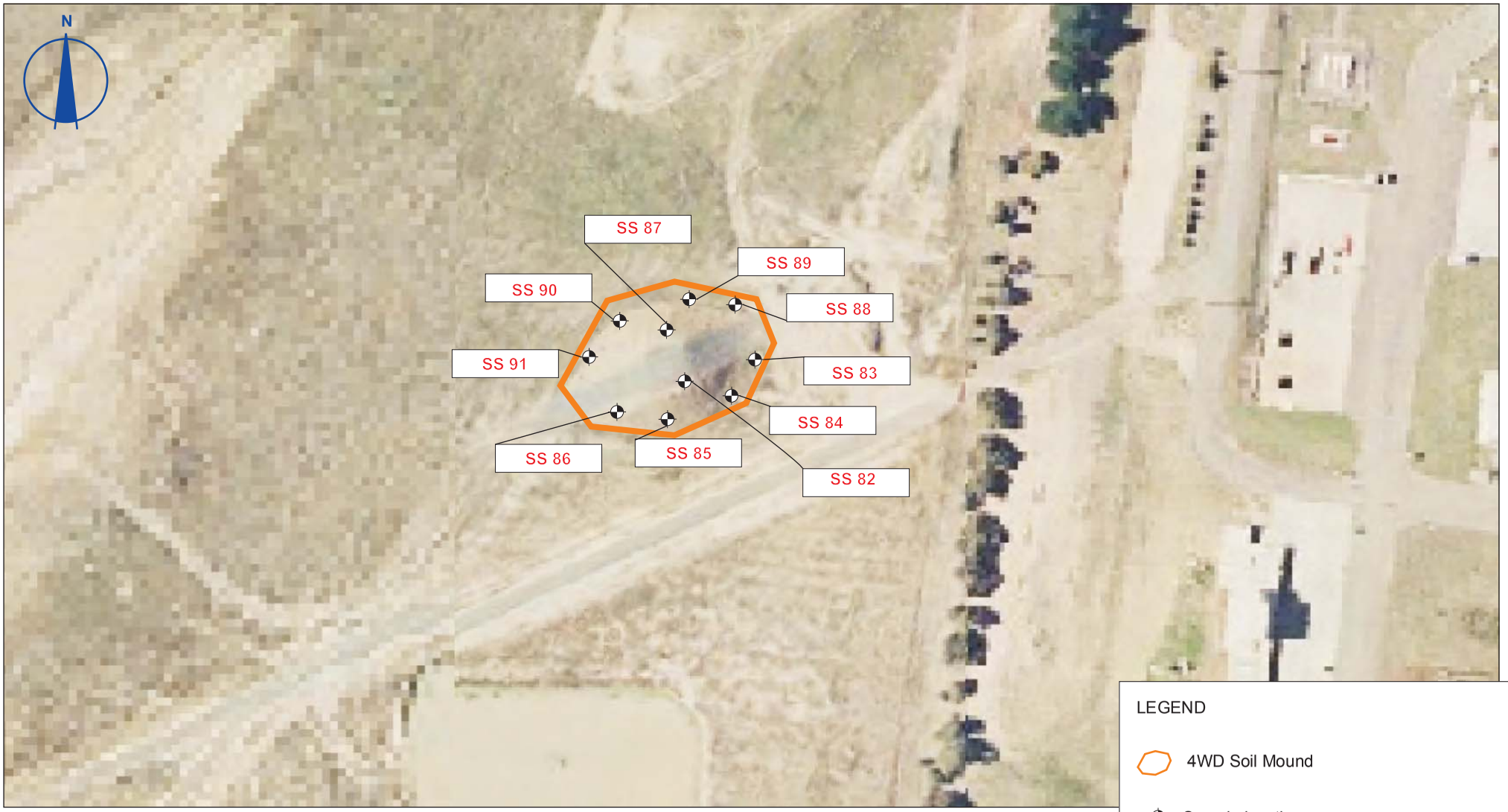
Appendices

Appendix A
2 Pages

Figures



Cardno LanePiper Shaping the Future Cardno Lane Piper Pty Ltd	PROJECT: 4WD Soil Mound Fiskville Training College 4549 Geelong-Ballan Road, Fiskville VIC	SCALE (A3): As Above	DATE: 09 July 2013	TITLE: Site Features Plan	
		JOB No: 212163.1	DRAWN: MCD		
		REF: 212163.1 Figure1.cdr	CHECKED: SD	REV: 0	FIG: 1



Cardno Lane Piper Pty Ltd

PROJECT: 4WD Soil Mound
Fiskville Training College
4549 Geelong-Ballan Road, Fiskville VIC

SCALE (A3): Approximate Scale	DATE: 09 July 2013	TITLE: Site Location Plan	
JOB No: 212163.1	DRAWN: MCD		
REF: 212163.1 Figure2.cdr	CHECKED: SD	REV: 0	FIG: 2

Appendix B
1 Page

Tables

Appendix B
Table 1 : Soil Analytical Results

Field_ID	SS82	SS83	SS84	SS85	SS86	SS87	SS88	SS89	SS90	SS91
Sampled_Date-Time	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013	20/06/2013
Lab_Report_Number	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585	EM1306585
LocCode	SS82	SS83	SS84	SS85	SS86	SS87	SS88	SS89	SS90	SS91

Chem_Group	ChemName	Units	EQL	NEPM 1999 EIL	Human Health	NEPM 1999 HIL F									
BTEX	Benzene	mg/kg	0.2	310 (3,7)	11 (3,8)		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Ethylbenzene	mg/kg	0.5	430 (6,7)	36000 (6,8)		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Toluene	mg/kg	0.5	330 (5,7)	82000 (5,8)		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (m & p)	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (o)	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Total	mg/kg	0.5	230 (4,7)	560000 (4,8)		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total BTEX	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Inorganics	Moisture	%	1				20.4	20.4	24.6	25.9	20.6	22.2	16	15.7	17.7	18.5
Metals	Arsenic	mg/kg	5	20		500	<5	<5	8	6	<5	15	<5	7	<5	<5
	Barium	mg/kg	10	300			40	40	60	70	50	110	40	40	50	50
	Beryllium	mg/kg	1			100	<1	<1	1	1	<1	1	<1	<1	<1	<1
	Cadmium	mg/kg	1	3		100	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
	Chromium (III+VI)	mg/kg	2	1 (1)			50	47	72	79	40	122	25	32	24	32
	Cobalt	mg/kg	2			500	11	4	9	10	6	14	2	2	3	3
	Copper	mg/kg	5	100		5000	8	6	8	10	6	20	<5	<5	<5	<5
	Lead	mg/kg	5	600		1500	10	10	13	15	12	34	10	12	10	10
	Manganese	mg/kg	5	500		7500	113	90	150	109	122	140	57	48	51	84
	Mercury	mg/kg	0.1	1		75	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	mg/kg	2	60		3000	16	10	19	19	11	21	6	5	6	7
	Vanadium	mg/kg	5	50			85	76	139	144	78	261	69	125	55	72
	Zinc	mg/kg	5	200		35000	9	7	16	13	12	74	20	<5	6	5
Other	6:2 Fluorotelomer Sulfonate (6:2 FtS) (11)	mg/kg	0.005	0.37	6		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	PFOA	mg/kg	0.0005		16 (10)		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.012	0.0007	0.0008	0.0008	0.0011
	PFOS	µg/kg	0.5	370 (9)	6000 (10)		3.5	38.7	28	23.6	107	390	35.7	38.8	35.3	32.9
PAH/Phenols	Naphthalene	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TPH	C6 - C9	mg/kg	10				<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	C10 - C14	mg/kg	50				<50	<50	<50	90	<50	<50	<50	<50	<50	<50
	C15 - C28	mg/kg	100				<100	<100	<100	900	300	220	<100	<100	<100	<100
	C29-C36	mg/kg	100				<100	<100	<100	990	440	370	<100	<100	<100	<100
	+C10 - C36 (Sum of total)	mg/kg	50				<50	<50	<50	1980	740 - 765	590 - 615	<50	<50	<50	<50
TRH	C6-C10	mg/kg	10				<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	C6-C10 less BTEX (F1)	mg/kg	10	217 (12,7)	19000 (2,8)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	C10-C16	mg/kg	50	172 (12,7)	10000 (2,8)		<50	<50	<50	190	60	<50	<50	<50	<50	<50
	C16-C34	mg/kg	100	2500 (2,7)	23000 (2,8)		<100	<100	<100	1570	600	450	<100	<100	<100	<100
	C34-C40	mg/kg	100	6600 (2,7)	RES (2,8)		<100	<100	<100	560	300	230	<100	<100	<100	<100
	C10 - C40 (Sum of total)	mg/kg	50				<50	<50	<50	2320	960	680	<50	<50	<50	<50

Comments:

1. Chromium VI criteria for NEPM 1999
2. CCME (2008) for TRH. RES = Residual petroleum hydrocarbons, calculated value exceeds 30,000 mg/kg and solubility limit for fraction.
3. CCME (2004a) for Benzene.
4. CCME (2004b) for Xylenes.
5. CCME (2004c) for Toluene.
6. CCME (2004d) for Ethylbenzene.
7. The ecological guideline for direct soil contact and soil ingestion for fine soil for commercial/industrial land uses.
8. The lowest human health guidelines for direct contact (soil ingestion or dermal contact) for commercial/industrial land uses.
9. Environment Agency (2004) for PFOS, $PNEC_{soil}$ for earthworm adopted as criteria for soil.
10. US EPA (2009) for PFOS and FOA.
11. Soil criteria for PFOS are adopted for 6:2 FtS due to lack of suitable criteria as a conservative measure.
12. Warne M. (2010) Review of the Appropriateness of the Canadian Petroleum Hydrocarbon Country Wide Standards in Soil for Incorporation into the NEPM (ASC).

Appendix C
5 Pages

Field Sampling Records

QF3.01 – Fieldwork Daily Report

Project Details	
Project Name: Soil Investigation	Job Number: 212163.7
Site Address: Fishville	PP/PM: APL / AME
Client Company/Contact: CFA	Date: 19/6/13
Persons Present: SD	Notes By: SD

Site Activities	Yes	Comment/Details
PESA Site Inspection / Interview personnel	–	
Inspect or supervise bores/test pits/ observe sampling/ remediation works	–	
Audit fieldwork methods QA/QC	–	
Soil sampling - test pit / soil bore / soil grab	✓	
Soil gas / LFG investigation	–	
Groundwater bore construction / GME / Groundwater levels / sampling	–	
Geotechnical Investigation	–	
Compaction Control Tests	–	
Field consumables used? (if so what?)	✓	These must be charged via timesheet
Photographs (Digital)	✓	
Supplementary notes attached	✓	
Weather Conditions & Temperature	T: -2°C	Frosty, windy, v. cold.

Notes / Sketch Plan:

N

Arrival on site - 8:20am

Sign in and arrival at 4WD track - 8:40am

Stockpile sampling

Left site - 10:45am

DAILY TOOLBOX SAFETY MEETING

Cardno LanePiper

Date: 19/6/2013 Time: 8:35 Cardno Job No.: 212163·1

Client: CFA Site ID: Aisleville

Site Address: 4549 Geelong Ballan Rd

Specific Location: 4WD training area.

Type of Work: Soil Investigation Chemicals Used: —

SAFETY TOPICS PRESENTED

Protective Clothing / Equipment

- [ ] Hard Hat
- [x] Steel-Toed Boots
- [x] Long Sleeve Protection
- [ ] Air Monitoring
- [x] Safety Glasses
- [x] Gloves
- [ ] Hearing Protection
- [ ] Respirator
- [ ] Safety Goggles
- [x] Reflective Traffic Vest
- [ ] Tyvek Suit
- [ ] Other:

Biological Hazards

- [ ] Bees / Wasps
- [x] Spiders
- [ ] Snakes
- [ ] Other:

Chemical Hazards

- [ ] Petroleum Constituents in Soil / Groundwater
- [x] Other: PFC

Physical Hazards

- [ ] Drilling Equipment
- [ ] Vehicle Traffic
- [ ] Material Handling
- [ ] Overhead/Buried Utilities
- [ ] Earth-moving Equip.
- [ ] Pedestrian Traffic
- [ ] Pinch Points
- [x] Inclement Weather
- [ ] Crane(s)
- [x] Slips, Trips & Falls
- [ ] Elec./Shock Hazards
- [ ] Other:

Special Equipment

- [ ] Traffic Control
- [ ] Exclusion Zone
- [ ] Barricades
- [ ] Other:

Safety Documents

- [ ] White Card
- [ ] LPS Training
- [x] JSA/SWP Reviewed
- [ ] Safety Alerts

Required Permits

- [ ] Hot Work Permit
- [ ] Well Const/Dest Permit
- [ ] Other
- [ ] Other:

Additional / Other Safety Topics Presented:

EMERGENCY PROCEDURES Call 0-0-0 (cell phone) 1-1-2 [ ] Apply First Aid [ ] Emergency Rally Point

HOSPITAL/CLINIC INFORMATION:

Name: St John of God - Geelong

Phone No:

Address:

City, State: Refer to attached JSA

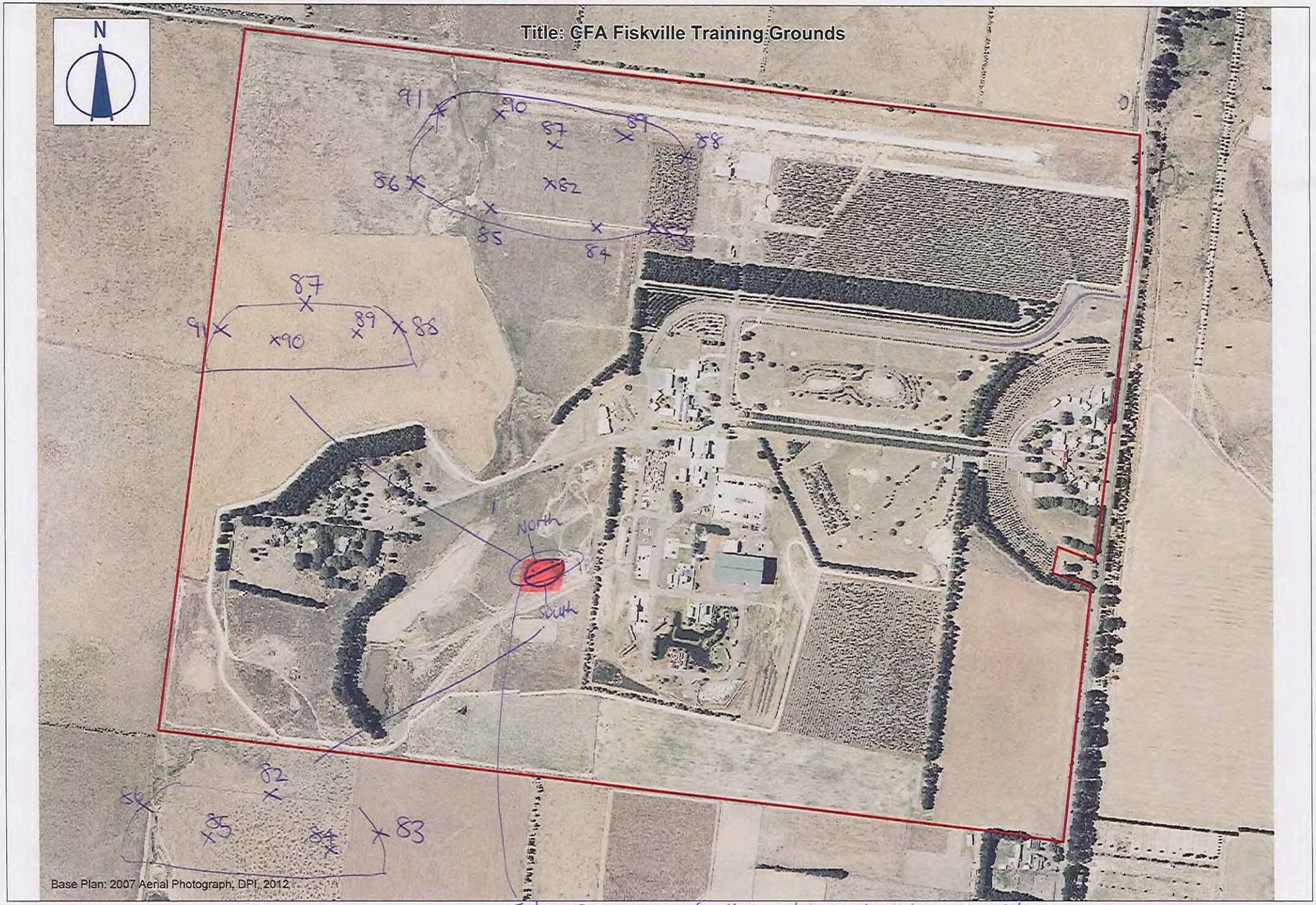
DIRECTIONS TO HOSPITAL/CLINIC:

ATTENDEES

NAME PRINTED	SIGNATURE	COMPANY

MEETING CONDUCTED BY:

NAME PRINTED	SIGNATURE	COMPANY
Srijeeta De	Srijeeta De	CLP



job number: 212163.1

Take 10 samples of the driver training mound 5 on each side. ~~Test for CAA (NEPC Suite 1999)~~. & Inspect for Asbestos.

QF3.03 – Soil Sample Descriptions

Project Details	
Project Name: Soil Investigation	Job Number: 212163 · 1
Site Address: CFA, Fiskville	PP/PM: APL / LMR
Client Company/Contact: CFA / Martyn Bona	Date: 19/6/13
Persons Present: SD	Notes By: SD

Sample No.	Depth Interval	Soil Type	Description (Include fill/natural, texture, moisture, plasticity, colour, odours noted, inclusions)	PID (ppm) (Headspace)
SS82	0·1–0·2	GP	Gravelly Sand with clay, Lp, No fiss, L. brown/grey, loose, moist	O=0 V=0
SS83	0·1–0·2	SC	Clayey Sand, Hp, M-fiss, grey/brown, stiff, dense, moist	O=0 V=0
SS84	0·1–0·2	SC	" " " " " " "	O=0 V=0
SS85	0·1–0·2	SC	" " " , grey/brown/orange mottling, V. stiff, dense, moist–dry	O=0 V=0
SS86	0·1–0·2	SC	Clayey Sand, Hp, M-fiss, red/brown, hard, v. stiff, dry–moist	O=0 V=0
SS87	0·1–0·2	GP	Gravelly sand with clay, Lp, no fiss., l. brown/grey, loose, moist	O=0 V=0
SS88	0·1–0·2	CH	Silty clay, Hp, mod-fiss, l. brown/brown, med dense, firm, moist	O=0 V=0
SS89	0·1–0·2	CH	Silty clay occasional gravel, Hp, mod fiss, brown/green, dense, firm, moist	O=0 V=0
SS90	0·1–0·2	CH	Silty Clay, Hp, M-fiss, brown/grey, dense, firm, moist	O=0 V=0

Sample No.	Depth Interval	Soil Type	Description (Include fill/natural, texture, moisture, plasticity, colour, odours noted, inclusions)	PID (ppm) (Headspace)
SS91	0.1-0.2	CH	Silty Clay, Hp, High fiss, grey/brown, dense, firm, moist	0=0 V=0

Appendix D
4 Pages

Photographs

Surface Soil Assessment - 4WD High Mound
Fiskville Fire Training College

PLATE 1 High Mound, the main and highest soil mound in the 4WD training area.

PLATE 2 Close up of the soil present in the High Mound

PLATE 3 From top of High Mound looking west towards Lake Fiskville

PLATE 4 Northern side of High Mound

Appendix E
22 Pages

Laboratory Results and Chain of Custody Documentation

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1306585**	Page	: 1 of 7
Client	: **CARDNO LANE PIPER PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MS SRIJEETA DE	Contact	: Carol Walsh
Address	: 154 HIGHBURY ROAD BURWOOD VIC, AUSTRALIA 3125	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: srijeeta.de@cardno.com.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 98880100	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 98083511	Facsimile	: +61-3-8549 9601
Project	: 212163 1	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 20-JUN-2013
Sampler	: SD	Issue Date	: 28-JUN-2013
Site	: CFA Fiskville		
		No. of samples received	: 10
Quote number	: ME/441/12 V2	No. of samples analysed	: 10

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EP231: PFOA & PFOS results are reported as an aggregate of linear and branched isomers.**
- **PFOA/PFOAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.**

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
		Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
		Melbourne Organics
		Melbourne Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Client sample ID	SS82	SS83	SS84	SS85	SS86
				Client sampling date / time	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00
					EM1306585-001	EM1306585-002	EM1306585-003	EM1306585-004	EM1306585-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		20.4	20.4	24.6	25.9	20.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	8	6	<5
Barium	7440-39-3	10	mg/kg		40	40	60	70	50
Beryllium	7440-41-7	1	mg/kg		<1	<1	1	1	<1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		50	47	72	79	40
Cobalt	7440-48-4	2	mg/kg		11	4	9	10	6
Copper	7440-50-8	5	mg/kg		8	6	8	10	6
Lead	7439-92-1	5	mg/kg		10	10	13	15	12
Manganese	7439-96-5	5	mg/kg		113	90	150	109	122
Nickel	7440-02-0	2	mg/kg		16	10	19	19	11
Vanadium	7440-62-2	5	mg/kg		85	76	139	144	78
Zinc	7440-66-6	5	mg/kg		9	7	16	13	12
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	90	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	900	300
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	990	440
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	1980	740
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	190	60
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	1570	600
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	560	300
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	2320	960
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS82	SS83	SS84	SS85	SS86
				Client sampling date / time	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00
Compound	CAS Number	LOR	Unit		EM1306585-001	EM1306585-002	EM1306585-003	EM1306585-004	EM1306585-005
EP080: BTEX - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN									
^ Sum of BTEX	---	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.0005	mg/kg		**0.0035**	**0.0387**	**0.0280**	**0.0236**	**0.107**
PFOA	335-67-1	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg		<0.005	<0.005	<0.005	<0.005	<0.005
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**70.2**	**84.6**	**82.8**	**79.4**	**93.6**
Toluene-D8	2037-26-5	0.1	%		**78.5**	**87.2**	**87.3**	**86.0**	**90.3**
4-Bromofluorobenzene	460-00-4	0.1	%		**82.1**	**94.2**	**91.0**	**84.5**	**96.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Client sample ID	SS87	SS88	SS89	SS90	SS91
				Client sampling date / time	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00
					EM1306585-006	EM1306585-007	EM1306585-008	EM1306585-009	EM1306585-010
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		22.2	16.0	15.7	17.7	18.5
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		15	<5	7	<5	<5
Barium	7440-39-3	10	mg/kg		110	40	40	50	50
Beryllium	7440-41-7	1	mg/kg		1	<1	<1	<1	<1
Cadmium	7440-43-9	1	mg/kg		1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		122	25	32	24	32
Cobalt	7440-48-4	2	mg/kg		14	2	2	3	3
Copper	7440-50-8	5	mg/kg		20	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		34	10	12	10	10
Manganese	7439-96-5	5	mg/kg		140	57	48	51	84
Nickel	7440-02-0	2	mg/kg		21	6	5	6	7
Vanadium	7440-62-2	5	mg/kg		261	69	125	55	72
Zinc	7440-66-6	5	mg/kg		74	20	<5	6	5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		220	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		370	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		590	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		450	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		230	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		680	<50	<50	<50	<50
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS87	SS88	SS89	SS90	SS91
				Client sampling date / time	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00	20-JUN-2013 15:00
Compound	CAS Number	LOR	Unit		EM1306585-006	EM1306585-007	EM1306585-008	EM1306585-009	EM1306585-010
EP080: BTEX - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN									
^ Sum of BTEX	---	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.0005	mg/kg		**0.390**	**0.0357**	**0.0388**	**0.0353**	**0.0329**
PFOA	335-67-1	0.0005	mg/kg		**0.0120**	**0.0007**	**0.0008**	**0.0008**	**0.0011**
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg		<0.005	<0.005	<0.005	<0.005	<0.005
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**82.0**	**83.2**	**89.4**	**90.8**	**89.1**
Toluene-D8	2037-26-5	0.1	%		**82.7**	**87.0**	**87.3**	**89.9**	**81.9**
4-Bromofluorobenzene	460-00-4	0.1	%		**88.4**	**92.5**	**84.5**	**93.4**	**82.7**

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	51	133

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EM1306585**	Page	: 1 of 8
Client	: **CARDNO LANE PIPER PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MS SRIJEETA DE	Contact	: Carol Walsh
Address	: 154 HIGHBURY ROAD BURWOOD VIC, AUSTRALIA 3125	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: srijeeta.de@cardno.com.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 98880100	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 98083511	Facsimile	: +61-3-8549 9601
Project	: 212163 1	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: CFA Fiskville		
C-O-C number	: ----	Date Samples Received	: 20-JUN-2013
Sampler	: SD	Issue Date	: 28-JUN-2013
Order number	: ----		
		No. of samples received	: 10
Quote number	: ME/441/12 V2	No. of samples analysed	: 10

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

This Quality Control Report contains the following information:

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

General Comments

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

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
		Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
		Melbourne Organics
		Melbourne Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 2929342)									
EM1306578-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.7	17.3	2.4	0% - 50%
EM1306585-008	SS89	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.7	15.6	0.0	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 2932065)									
EM1306413-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	40	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	104	114	9.5	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
EM1306585-003	SS84	EG005T: Beryllium	7440-41-7	1	mg/kg	1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	60	60	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	72	71	1.9	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	9	8	23.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	14	29.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	<5	49.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	12	11.3	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	150	135	10.9	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	139	136	2.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	16	14	17.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2932066)									
EM1306413-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1306585-003	SS84	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2929319)									
EM1306558-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1306585-001	SS82	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2931414)									
EM1306558-015	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2931414) - continued									
EM1306558-015	Anonymous	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EM1306585-001	SS82	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2929319)									
EM1306558-006	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1306585-001	SS82	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2931414)									
EM1306558-015	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EM1306585-001	SS82	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 2929319)									
EM1306558-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM1306585-001	SS82	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP231: Perfluorinated Compounds (QC Lot: 2935967)									
EM1306585-005	SS86	EP231: PFOS	1763-23-1	0.0005	mg/kg	0.107	0.102	5.6	0% - 20%
		EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.0006	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2932065)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.8	80	120
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	96.2	80	120
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	102	80	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	107	80	120
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	100	80	120
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16.0 mg/kg	85.8	80	120
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	103	80	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	95.8	80	120
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	97.1	80	120
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	99.7	80	120
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	93.2	80	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.5	80	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2932066)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	93.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2929319)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	97.3	63	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2931414)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	602 mg/kg	113	55	121
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1875 mg/kg	102	72	124
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	738 mg/kg	102	66	116
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2929319)								
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	45 mg/kg	96.8	60	134
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2931414)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	929 mg/kg	104	66	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	2237 mg/kg	107	69	119
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	232 mg/kg	89.0	44	124
EP071: >C10 - C40 Fraction (sum)	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 2929319)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	94.5	68	120
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	100	69	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	94.2	65	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	99.6	63	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 2929319) - continued								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	100	66	130
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	98.4	56	136
EP231: Perfluorinated Compounds (QCLot: 2935967)								
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	.0025 mg/kg	59.5	54	146
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	.0025 mg/kg	75.0	54	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	.0125 mg/kg	61.8	56	138

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 2932065)							
EM1306413-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.5	78	124
		EG005T: Barium	7440-39-3	50 mg/kg	# Not Determined	71	130
		EG005T: Beryllium	7440-41-7	50 mg/kg	101	85	125
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.4	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	101	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	86.7	76	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.3	78	120
		EG005T: Vanadium	7440-62-2	50 mg/kg	98.0	76	124
		EG005T: Zinc	7440-66-6	50 mg/kg	104	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2932066)							
EM1306413-003	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.2	80	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2929319)							
EM1306558-015	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	94.7	44	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2931414)							
EM1306558-015	Anonymous	EP071: C10 - C14 Fraction	----	602 mg/kg	93.4	53	123
		EP071: C15 - C28 Fraction	----	1875 mg/kg	84.1	70	124
		EP071: C29 - C36 Fraction	----	738 mg/kg	81.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2929319)							
EM1306558-015	Anonymous	EP080: C6 - C10 Fraction	----	33 mg/kg	92.5	45	127

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2931414)							
EM1306558-015	Anonymous	EP071: >C10 - C16 Fraction	----	929 mg/kg	86.0	65	123
		EP071: >C16 - C34 Fraction	----	2237 mg/kg	87.7	67	121
		EP071: >C34 - C40 Fraction	----	232 mg/kg	70.1	44	126
EP080: BTEXN (QCLot: 2929319)							
EM1306558-015	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	94.9	43	137
		EP080: Toluene	108-88-3	2 mg/kg	105	51	137
EP231: Perfluorinated Compounds (QCLot: 2935967)							
EM1306585-005	SS86	EP231: PFOS	1763-23-1	.0025 mg/kg	# Not Determined	54	146
		EP231: PFOA	335-67-1	.0025 mg/kg	78.6	54	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	.0125 mg/kg	61.1	56	138

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

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2929319)										
EM1306558-015	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	94.7	----	44	124	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2929319)										
EM1306558-015	Anonymous	EP080: C6 - C10 Fraction	----	33 mg/kg	92.5	----	45	127	----	----
EP080: BTEXN (QCLot: 2929319)										
EM1306558-015	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	94.9	----	43	137	----	----
		EP080: Toluene	108-88-3	2 mg/kg	105	----	51	137	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2931414)										
EM1306558-015	Anonymous	EP071: C10 - C14 Fraction	----	602 mg/kg	93.4	----	53	123	----	----
		EP071: C15 - C28 Fraction	----	1875 mg/kg	84.1	----	70	124	----	----
		EP071: C29 - C36 Fraction	----	738 mg/kg	81.9	----	64	118	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2931414)										
EM1306558-015	Anonymous	EP071: >C10 - C16 Fraction	----	929 mg/kg	86.0	----	65	123	----	----
		EP071: >C16 - C34 Fraction	----	2237 mg/kg	87.7	----	67	121	----	----
		EP071: >C34 - C40 Fraction	----	232 mg/kg	70.1	----	44	126	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2932065)										
EM1306413-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.5	----	78	124	----	----

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG005T: Total Metals by ICP-AES (QCLot: 2932065) - continued										
EM1306413-003	Anonymous	EG005T: Barium	7440-39-3	50 mg/kg	# Not Determined	----	71	130	----	----
		EG005T: Beryllium	7440-41-7	50 mg/kg	101	----	85	125	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.4	----	84	116	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	101	----	79	121	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	104	----	82	124	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	86.7	----	76	124	----	----
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	95.3	----	78	120	----	----
		EG005T: Vanadium	7440-62-2	50 mg/kg	98.0	----	76	124	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	104	----	74	128	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2932066)										
EM1306413-003	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.2	----	80	120	----	----
EP231: Perfluorinated Compounds (QCLot: 2935967)										
EM1306585-005	SS86	EP231: PFOS	1763-23-1	.0025 mg/kg	# Not Determined	----	54	146	----	----
		EP231: PFOA	335-67-1	.0025 mg/kg	78.6	----	54	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	.0125 mg/kg	61.1	----	56	138	----	----

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1306585**	Page	: 1 of 6
Client	: CARDNO LANE PIPER PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MS SRIJEETA DE	Contact	: Carol Walsh
Address	: 154 HIGHBURY ROAD BURWOOD VIC, AUSTRALIA 3125	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: srijeeta.de@cardno.com.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 98880100	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 98083511	Facsimile	: +61-3-8549 9601
Project	: 212163 1	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: CFA Fiskville		
C-O-C number	: ----	Date Samples Received	: 20-JUN-2013
Sampler	: SD	Issue Date	: 28-JUN-2013
Order number	: ----		
		No. of samples received	: 10
Quote number	: ME/441/12 V2	No. of samples analysed	: 10

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
SS82,	SS83,	**20-JUN-2013**	**----**	----	----	**21-JUN-2013**	04-JUL-2013	✓
SS84,	SS85,							
SS86,	SS87,							
SS88,	SS89,							
SS90,	SS91							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
SS82,	SS83,	**20-JUN-2013**	**25-JUN-2013**	17-DEC-2013	✓	**25-JUN-2013**	17-DEC-2013	✓
SS84,	SS85,							
SS86,	SS87,							
SS88,	SS89,							
SS90,	SS91							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
SS82,	SS83,	**20-JUN-2013**	**25-JUN-2013**	18-JUL-2013	✓	**26-JUN-2013**	18-JUL-2013	✓
SS84,	SS85,							
SS86,	SS87,							
SS88,	SS89,							
SS90,	SS91							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
SS82,	SS83,	**20-JUN-2013**	**25-JUN-2013**	04-JUL-2013	✓	**25-JUN-2013**	04-AUG-2013	✓
SS84,	SS85,							
SS86,	SS87,							
SS88,	SS89,							
SS90,	SS91							

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEX							
Soil Glass Jar - Unpreserved (EP080)							
SS82, SS83, SS84, SS85, SS86, SS87, SS88, SS89, SS90, SS91	**20-JUN-2013**	**21-JUN-2013**	04-JUL-2013	✓	**24-JUN-2013**	04-JUL-2013	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
SS82, SS83, SS84, SS85, SS86, SS87, SS88, SS89, SS90, SS91	**20-JUN-2013**	**21-JUN-2013**	04-JUL-2013	✓	**24-JUN-2013**	04-JUL-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
SS82, SS83, SS84, SS85, SS86, SS87, SS88, SS89, SS90, SS91	**20-JUN-2013**	**21-JUN-2013**	04-JUL-2013	✓	**24-JUN-2013**	04-JUL-2013	✓
EP231: Perfluorinated Compounds							
Soil Glass Jar - Unpreserved (EP231)							
SS82, SS83, SS84, SS85, SS86, SS87, SS88, SS89, SS90, SS91	**20-JUN-2013**	**27-JUN-2013**	17-DEC-2013	✓	**27-JUN-2013**	06-AUG-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for Perfluoroalkyl Compounds	EP231-PR	SOIL	In-House
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1306413-003	Anonymous	**Barium**	7440-39-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EM1306413-003	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231: Perfluorinated Compounds	EM1306585-005	SS86	**PFOS**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

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

- **No Quality Control Sample Frequency Outliers exist.**

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Chain of Custody

Sheet 1 of 1

Name: Srijeeta De

Phone: 03 9888 0100 **Fax:** 03 9808 3511 **Mobile:** 0447500007

Address: Building 2, 154 Highbury Rd, Burwood, Vic, 3125

Email: srijeeta.de @cardno.com.au

Project Number: 212163.1 **Site:** CFA Fiskville

Laboratory (name, phone,fax no & contact person) ALS

Environmental Division Melbourne Work Order EM1306585

Telephone : +61-3-8549 9600

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Water	Soil	Sludge	Other (Specify)	Composite	Sample preservation: Ice bricks	HNO_3/HCl	Unpreserved	Other (Specify) ICE	Analysis: PFOA/PFOS/6:2FTS	Metals 13	TPH/BTEX
SS82	1	Jar	20/06/2013			X							X	X	X	X
SS83	2					X							X	X	X	X
SS84	3					X							X	X	X	X
SS85	4					X							X	X	X	X
SS86	5					X							X	X	X	X
SS87	6					X							X	X	X	X
SS88	7					X							X	X	X	X
SS89	8					X							X	X	X	X
SS90	9					X							X	X	X	X
SS91	10					X							X	X	X	X

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Srijeeta De **Sampler name:** (print and signature) Srijeeta Date:

Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and signature)	Date	Time
S De	20/6/13	2:20pm	1N (ALS)	20/6/13	16:05
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
5549 20/6/13.					
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ~~ESDAT files~~.

Turn around time: (24 hour/48 hour/5 days) Standard ~~Other (specify)~~

In accordance with your acceptance of our standard or customised Terms of Agreement between Cardno Lane Piper Pty Ltd and Service or Equipment Providers

Appendix F
3 Pages

About ESA Reports

About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno Lane Piper.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno Lane Piper generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno Lane Piper are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno Lane Piper should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno Lane Piper and seek their opinion. Cardno Lane Piper accepts no liability for costs incurred due to such unexpected

occurrences, given the inherent uncertainties in the assessment process.

Cardno Lane Piper uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno Lane Piper. However, however Cardno Lane Piper cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno Lane piper will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno Lane Piper
25 February 2013