

Twynam Property Group

Stage 2 Environmental Site Assessment:
Lot 3 DP568613 & Lot 384 DP 755952
Mundamia, NSW.



ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P0802193JR03V01
April 2013

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Document and Distribution Status								
Author(s)			Reviewer(s)		Project Manager		Signature	
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Revision No.	Status	Release Date	Document Location					
			File Copy	Twynam Property Group				
1	Draft	12/02/2013	1E, 1P	1P				
1	Final	04.04.2013	1E, 1P	1P				

Distribution Types: F = Fax, H = hard copy, P = PDF document, E = Other electronic format. Digits indicate number of document copies.

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1 Introduction

1.1 Overview

This report prepared by Martens and Associates (MA), on behalf of the client (Twynam Property Group) documents a Stage 2 Environmental Site Assessment (ESA) completed to support an application for the subdivision of 'the site' being two adjacent lots: Lot 3, DP 568613 (northern lot) and Lot 384, DP 755952 (southern lot).

A Stage 1 ESA has been completed and the reported (Martens and Associates, 2008) and is to be read in conjunction with this Stage 2 ESA.

1.2 Objectives

The objective of this Stage 2 ESA is to assess site soil contamination in order to determine suitability for proposed subdivision and future residential land use.

1.3 Scope of Works

The scope of works included:

- Extended site walkover as recommended in previous Stage 1 ESA (MA 2008) to confirm areas of environmental concern (AEC) and associated chemicals of concern (COC).
- Review and update previously identified AEC and COC.
- Drilling of twelve boreholes (BH401-BH412) and collection of soil samples from across the site for laboratory analysis.
- Preparation of a report in general accordance with the relevant sections of NSW OEH (2011) and DEC (2006).

1.4 Abbreviations

AEC – Area of environmental concern

AST – Above ground storage tank

BTEX – Benzene, toluene, ethyl benzene, xylene

COC – Chemical of concern

DEC – NSW Department of Environment and Conservation

DBT – Dibutyltin

DP – Deposited Plan

EPA – NSW Environmental Protection Authority

ESA – Environmental site assessment

LOR – Limit of reporting

LGA – Local government area

NATA – National Association of Testing Authorities

OCP – Organochloride pesticides

OEH – NSW Office of Environment and Heritage

OPP – Organophosphate pesticides

PAH – Polycyclic aromatic hydrocarbons

PCB – Polychlorinated biphenyl

RAP – Remedial action plan

SOP – Standard operating procedure

TPH – Total petroleum hydrocarbons

TRH – Total recoverable hydrocarbons

TCLP – Toxicity characteristics leaching procedure

UST – Underground storage tank

2 Site Background Information

2.1 Location and Setting

Site information taken from previous ESA (MA 2008) is summarised in Table 1.

Table 1: Site background information

LGA	Shoalhaven City Council (SCC)
Zoning	1 (d) 'General Rural'
Site area	Approximately 43.5 ha
Current land use	Rural residential / agricultural / livestock grazing
Proposed land use	Residential
Surrounding land uses	Predominantly rural with some rural residential allotments to the west and north, residential developments to the south east
Topography	Elevations across the site range from 36 – 70 mAHN with a general fall to the east
Geology	Geological survey of NSW geology sheet (Wollongong 5609) maps the site as Nowra sandstone, a subgroup of the Megalong conglomerate geology
Sensitive receptors	The site drains to an unnamed creek to the east which eventually drains to the Shoal Haven River.

Site location is shown in Figure 1 and site features relevant to the investigation are shown Attachment A.



Figure 1: Subject site location outlined in yellow. (Google Maps 2012)

3 Areas of Environmental Concern

3.1 Summary of Stage 1 ESA

A brief summary of site history is presented below:

- Anecdotal evidence from site owners indicated that site paddocks had been used for agricultural purposes (growing turnips, tomatoes and oats) and more recently for livestock grazing (sheep and horses).
- Evidence from the owner of Lot 3 indicated that organic waste from the Shoalhaven Paper Mill was imported for site use as fertiliser.
- Aerial photography suggests site dwellings have been in place since at least 1961 with no major agricultural use observed until 1970 with land clearing and dam construction.
- A preliminary site walkover confirmed site agricultural use (grazing) as well as identification of rubbish piles, disused vehicles and dilapidated dwelling across the site (locations in Section 3.2)
- A review of OEH records under the Contaminated Land Management Act (1997) confirmed the site was not subject to an investigation or remediation order. SSC historical records identified two DA approvals for the site for the construction of residential dwellings.

3.2 Extended Site Walkover

Based on previous Stage 1 ESA recommendations, an extended site walkover was undertaken prior to site soil sampling. Findings from the preliminary site walkover were confirmed and AEC and COC were confirmed.

3.3 Areas of Environmental Concern

Assessed AEC and adopted COC for the site are presented in Table 2. A site plan showing specific AEC locations is available in Attachment A.

Table 2: Areas of Environmental Concern and Chemicals of Concern

AEC	Potential Contaminating Activity	COC	Likelihood of Contamination
Area A - Residential dwelling and shed on Lot 3 DP 568613	Possible use of OCP/OPP pesticides (termite control) in construction of dwelling. Storage of hydrocarbons, pesticides, herbicides and paint in shed.	TRH, BTEX, PAH, heavy metals, OCP/OPP and herbicides.	Medium
Area B – Iron shed on Lot 3 DP 568613 south of residential dwelling	Soil staining noted. Evidence of mechanical repairs and disused motor vehicles. General refuse in area includes tyres, empty fuel and lubricant cans, car batteries, plastics, glass and metal.	TRH, BTEX, PAH, heavy metals.	High
Area C - Residential dwelling and shed on Lot 3 DP 568613	Possible use of OCP/OPP pesticides (termite control) in construction of dwelling. General refuse around shed includes building material, plastics, tyres and paint.	OCP/OPP and heavy metals.	Low
Area D - Heavily dilapidated residential dwelling and shed, Lot 384 DP 755952	Possible use of OCP/OPP pesticides (termite control) in construction of dwelling. General refuse around shed includes plastics, building material and bricks.	OCP/OPP and heavy metals.	Low
Area E – Concrete slab of former residential dwelling, , Lot 384 DP 755952	Possible use of OCP/OPP pesticides (termite control) in construction of dwelling.	OCP/OPP, and heavy metals.	Low

AEC	Potential Contaminating Activity	COC	Likelihood of Contamination
	Minor refuse noted.		
Area F - Two sheds north of Area E	Storage of mechanical equipment (tractor).	TRH, BTEX, PAH and heavy metals.	Low
Area G – Two sheds north west of Area E	Storage of disused motor vehicles.	TRH, BTEX, PAH and heavy metals.	Low
Area H – South west corner of Lot 384 DP 755952	Empty intermediate bulk containers (IBC) formally storing dye and adhesives used in paper manufacturing (no ground staining or vegetation die back noted in the area).	TRH, BTEX, PAH and heavy metals .	Low
Area I - Shed south of area D	Contents of shed unknown (no access). Minor refuse noted.	TPH, BTEX,PAH, OCP/OPP, heavy metals and asbestos.	Low
Area J – Shed south west corner of Lot 3 DP755952s	Contents of shed unknown (no access). Minor refuse noted.	TPH, BTEX, PAH,OCP, OPP, heavy metals and asbestos.	Medium
Site paddocks	Agricultural use (crop growing and livestock grazing).	Heavy metals and OCP/OPP.	Medium
Site rubbish piles - Seven identified across site	Stockpiles contain building material, asbestos sheeting, plastics and general refuse.	TPH, PAH, BTEX, OCP/ OPP, heavy metals and asbestos.	Medium
Dams - Four dams identified across site	Potential accumulation of contamination from agricultural activities.	Heavy metals, OCP/OPP and herbicides.	Low
Site stockpile - Two identified on sites	Stockpiles of soil from unknown origin mixed with builder's rubble and bitumen road shavings.	TPH,BTEX,PAH and heavy metals.	Medium

4 Field and Laboratory Investigations

4.1 Field Programme

AEC and COC identified were utilised to develop a field investigation programme to detail prevailing site contamination condition. Intrusive investigation (Table 3) was conducted across the site. Sampling was completed in accordance with the sampling design guidelines outlined in NSW EPA (1995).

4.2 Sampling Methodology and Quality Assurance / Quality Control

Sampling methods are discussed in Table 3.

Table 3: Soil sampling methods

Type	Number of Locations	Equipment	Description
Borehole	10	Solid flight hydraulic auger	Soils were collected at a range of depths, generally 0.05, 0.25, 0.5 and then at 0.5m intervals (as required to characterise contamination).
Test pit	2	Spade	Soils were collected at 0.05 and 0.25m
Stockpile	2	Spade	Soil samples collected directly from stockpile centre.
Surface	34	Spade	Soil samples collected from 0.0 - 0.2m.

Soil samples were selected for laboratory analysis based on likely zones of contamination and/or visual and olfactory evidence of contamination.

Sample depths were generally designed to provide information on the contamination status of shallow soils by identifying above ground potential contamination activities. Deeper soil samples were recovered to assess the vertical extent of contamination or where visual or olfactory evidence of contamination was observed.

Soil sampling methodology (Table 4) was completed to meet data quality objectives.

Table 4: Soil sampling methodology

Activity	Detail / Comments
Soil logging	Boreholes were logged by an environmental engineer in accordance with MA SOP.
Soil sampling	Soil sampling was completed by the supervising environmental engineer. Each sample was placed into a laboratory-supplied, acid-rinsed 250mL glass jar, labelled with a unique identification number and no headspace to limit volatile loss.
QA / QC sampling	Duplicate samples were collected at a rate of approximately 1 in 10 samples for intra-laboratory analysis.
Sample handling and transportation	Sample collection, storage and transport were conducted according to Martens and Associates SOP. Collected samples were placed into ice chilled cooler-boxes. Samples were dispatched to NATA-accredited laboratories under chain of custody documentation within holding times.
Decontamination of sampling equipment	Sampling equipment was decontaminated between sampling locations by pressurised water spray with a solution of Decon-90™, a phosphate-free detergent, followed by rinsing with potable water.

A review of QA/QC procedure has been completed and is presented in the data validation report (Attachment D). The report concludes that data is suitable for the purposes of the assessment.

4.3 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory and reports are available in Attachment B.

48 primary soil samples were selected for a suite of laboratory analyses (Table 5) based on COC identified in Table 2.

Two duplicate samples, one trip blank and one trip spike were analysed.

Table 5: Summary of primary soil laboratory analyses

COC	Number of Samples Analysed
BTEX	13
TRH	13
PAH	13
Heavy metals ¹	48
OCP / OPP	48
PCB	13
Asbestos in soil	20
Herbicides ²	11

Notes:

¹ Heavy metals – Arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc.

² Herbicides – Phenoxy acid and Triazine.

Heavy metal and OCP / OPP analysis was generally conducted by testing dual and triple composites for samples taken from site paddocks and AEC identified in Table 2. Some samples from identified AEC were analysed as discrete samples based on visual or olfactory evidence of contamination or a high likelihood of contamination based on past use.

A summary of site sampling and analysis is presented in Table 6.

Table 6: Summary of site testing and analyses

Sampling Location	Sample Description
Area A- Area J	Two surface samples (sample A and B) taken from each identified area. Samples from Area C – G and Area H - I tested in dual composite samples (each composite comprised sample A and B). All other areas, a single sample was selected for analyses as a discrete sample.
Site paddocks	12 samples from a depth of 0.05 tested in 4 triple composite samples.
Rubbish piles	7 surface samples from a depth range of 0.05 - 0.1 directly adjacent to identified rubbish pile. Each sample was analysed as a discrete sample.
Dams	4 sediment samples taken from the base of each dam. Each sample was analysed as a discrete sample.
Stockpiles	2 samples taken directly from the soil stockpiles each analysed as a discrete sample.

5 Assessment Criteria

5.1 Soil Contamination Assessment Criteria

Investigation levels for soil are established based on the following references:

- NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM);
- NSW DEC (2006) Guidelines for the NSW Auditor Scheme (Second Edition); and
- NSW EPA (1994) Guidelines for Assessing Service Station Sites.

Human health based soil investigation levels (HIL) for residential land use, provided in Column A of Table 11-A in the NEPC (1999) *Guidelines on Health-Based Investigation Levels* (and reproduced in NSW DEC, 2006) have been adopted as the soil investigation levels as the site's proposed future use is a residential development. Adopted HIL for BTEX and TRH is derived from NSW EPA (1994). Adopted criteria are summarised in Table 7.

Table 7: Adopted soil health investigation levels (HIL)

COC	Soil Criteria (mg/kg)	LOR ¹
TRH (C ₆ -C ₉)	65	25
TRH (C ₁₀ -C ₄₀)	1,000	250
Benzene	1	0.2
Toluene	1.4	0.5
Ethyl benzene	3.1	1
Xylene (total)	14	3
Total PAH	20	1.55 / 15.5 ⁴
Benzo(a)pyrene	1	0.05 / 0.5 ⁴
Aldrin + Dieldrin	10/5 ² /3.3 ³	0.2 / 2 ⁴
Chlordane	50/25 ² /16.7 ³	0.1
DDT + DDD + DDE	200/100 ² /67 ³	0.3 / 3 ⁴
Heptachlor	10/5 ² /3.3 ³	0.1 / 1 ⁴
PCB (total)	10	0.1 / 1 ⁴
Arsenic (total)	100/50 ² /33 ³	4
Cadmium	20/10 ² /6.7 ³	0.5
Chromium (VI)	100/50 ² /33 ³	1
Copper	1,000/500 ² /333 ³	1
Lead	300/150 ² /100 ³	1
Mercury	15/7.5 ² /5 ³	0.1
Nickel	600/300 ² /200 ³	1
Zinc	7,000/3500 ² /2333 ³	1

Notes¹ Limit of reporting (Envirolab).² HIL for dual composite.³ HIL for triple composite.⁴ LOR for sample 2193/AreaB/A was raised by the laboratory due to a high concentration of analytes (other than those being tested).

6 Results

6.1 Field Observations

6.1.1 Soil / Rock Profile

A summary of observations during intrusive investigation is presented in Table 8 with detailed borehole logs presented in Attachment C.

Table 8: Summary of site subsurface conditions

Lithology ¹	Depth Range (mBGL) ²
Silt	0.0 – 0.2 (variable)
Natural sands – silty / clayey	0.05 – 1.0 (variable)
Extremely weathered sandstone	0.7 – 1.0 (variable)

Notes:

¹ For detailed material description see borehole logs.

² Indicative depth range; may vary across site.

6.2 Laboratory Analytical Results

6.2.1 Soil

Soil analytical laboratory results from the investigations were compared against adopted soil investigation levels and are summarised below:

- **2193/AreaB/A** exceeded adopted HIL for TRH (C₁₀-C₃₆) **(58,053 mg/kg)**. Remaining samples analysed for TRH (C₁₀-C₃₆) were below LOR or below adopted HILs.
- All samples analysed for BTEX compounds were below LOR.
- All samples analysed for Benzo(a)pyrene and total PAH concentrations were below LOR or below adopted HILs.
- Heavy metal concentrations were below adopted HIL for all samples analysed.
- Samples analysed for OCP/OPP and PCB were below LOR and HIL.
- No asbestos in soil was detected at reporting limit of 0.1g/kg

7 Discussion and Recommendations

7.1 Discussion

Testing to date indicates that site contamination is confined to AEC "Area B" located in the south east corner of Lot 3 DP 568613. Refuse in the area included empty fuel cans, motor oil containers, lubricants and disused motor vehicles.

TRH (C₁₀-C₃₆) contamination was identified in sample 2193/Area B/A with levels exceed adopted HIL. Further remediation and / or management will be required prior to proposed future site use.

Fibrous cement sheeting identified in rubbish piles is likely to include asbestos. These materials are to be removed as part of site clearing works. Following removal, rubbish stockpile footprints are to be inspected and validated through visual inspection, soil sampling and laboratory testing as determined by Martens and Associates.

7.2 Recommendations

Based on the findings of this investigation a remediation action plan is required to render the site fit for the intended use. Further analysis of site areas inaccessible during site sampling (sheds in Areas I and J, areas under existing residential dwellings) is recommended following site clearing / demolition to address these areas of previously unaddressed contamination.

The nature of observed and identified potential site contamination is relatively minor. Following demolition of structures and removal of waste stockpiles, the remediation of identified contamination shall require comparatively simple works. The nature of assessed contamination is such that the remediation to render the site fit for use shall be readily implemented with standard land remediation practices. Site contamination is not considered sufficiently severe or extensive that it shall significantly impact on the site's potential for redevelopment.

8 Limitations

This Stage 2 contamination assessment was undertaken in accordance with current industry standards.

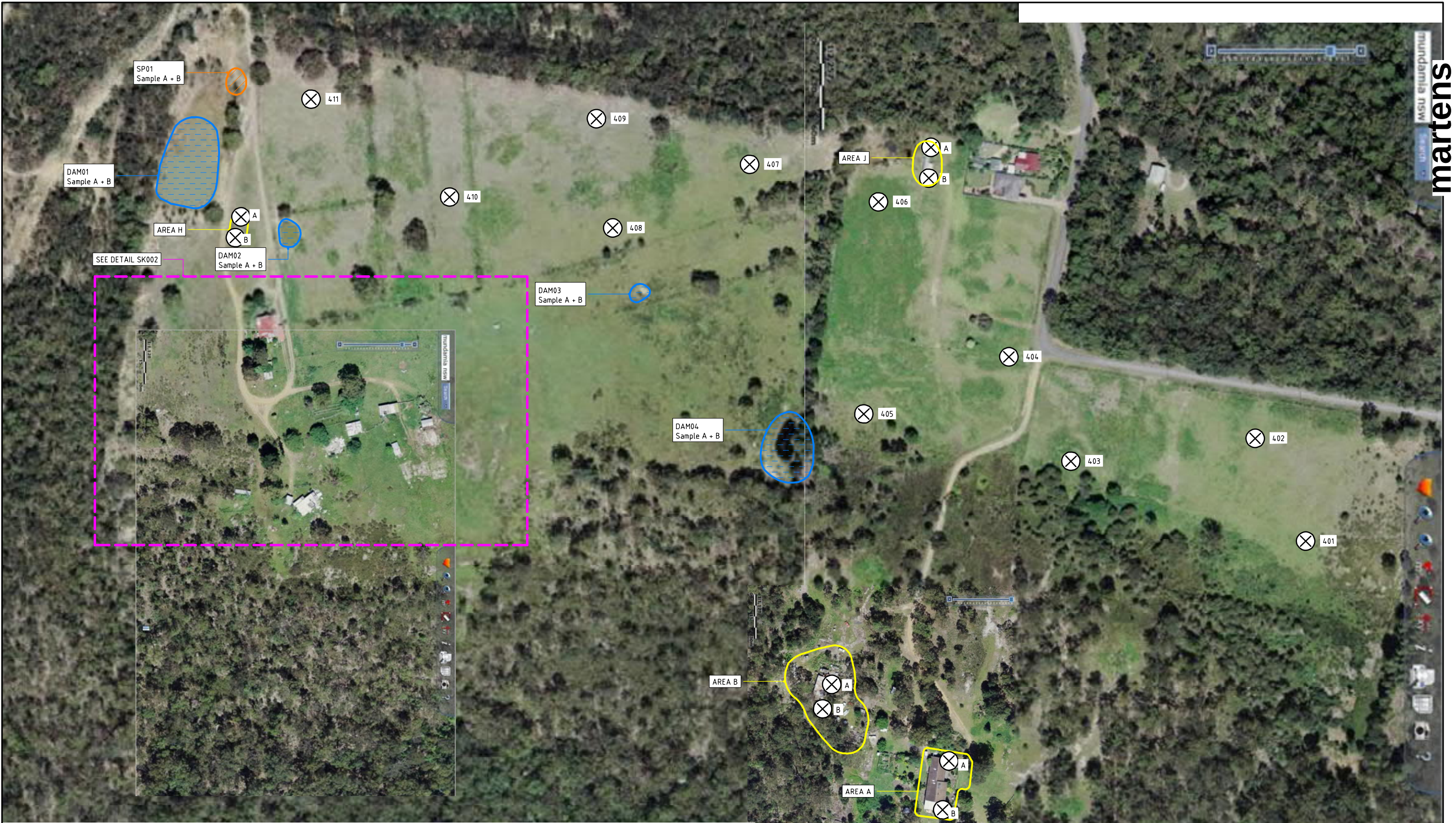
It is important to note that no land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land-uses. Therefore, this report should not be read as a guarantee that only contamination identified shall be found on the site. Should material be exposed in future which appears to be contaminated, additional testing may be required to determine the implications for the site.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of assessing potential site contamination. No reliance on this report should be made for any other investigation or proposal. Martens & Associates accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.

9 References

- Chapman and Murphy (1983) Wollongong 1:100 000 Soil Landscapes Sheet 9130.
- Geological Survey of NSW, Department of Minerals and Energy (1991), Geological Series: 1:100,000 Wollongong Sheet.
- Martens and Associates Pty Ltd (2008) Stage 1 Contamination Assessment : Lot3 Dp568613 and Lot 384 DP755952 Mundamia NSW, ref: P0802193JR01V01
- NEPC (1999) National Environmental Protection Measure, 1999 (site contamination measure).
- NSW DEC (2006) 2nd Ed. Contaminated Sites: Guidelines for the NSW Site Auditor Scheme.
- NSW DUAP/EPA (1998), "*SEPP 55 Managing Land Contamination, Planning Guidelines, Remediation of Land*";
- NSW EPA (1994) Contaminated Sites: Guidelines for Assessing Service Station Sites.
- NSW EPA (1995) *Sampling Design Guidelines*.
- NSW OEH (2011) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.

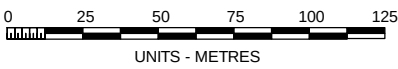
10 **Attachment A – Site Plans**



martens

LEGEND

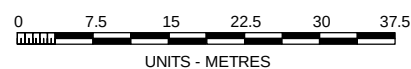
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-  STOCKPILE
-  DAM



NOTES
- TEST LOCATION IDENTIFIED BY SITE LANDMARKS ONLY.
- STOCKPILE AND RUBBISH PILE EXTENT AND LOCATION INDIATIVE.



Martens & Associates Pty Ltd		ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management			
Drawn:	KT	TEST LOCATIONS MUNDAMIA RELEASE LANDS			Drawing No./ID: SK001		
Approved:	AN						
Date:	08/02/13						
Scale @A3:	1:2500	6/37 Leighton Place, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au			Project: P0802193	File: JD03V01	Revision: A



LEGEND



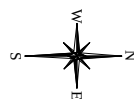
SURFACE SAMPLE



STOCKPILE



RUBBISH PILE



NOTES

- TEST LOCATION IDENTIFIED BY SITE LANDMARKS ONLY.
- STOCKPILE AND RUBBISH PILE EXTENT AND LOCATION INDIATIVE.

Martens & Associates Pty Ltd		ABN 85 070 240 890	Environment Water Wastewater Geotechnical Civil Management			
Drawn:	KT	TEST LOCATIONS MUNDAMIA RELEASE LANDS	Drawing No./ID:			
Approved:	AN		SK002			
Date:	08/02/13					
Scale @A3:	1:750					
		6/37 Leighton Place, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au	Project: P0802193	File: 1D03V01	Revision: A	

**11 Attachment B - Laboratory Analytical Certificates and
Chain of Custody Documentation**

CERTIFICATE OF ANALYSIS

84007

Client:

Martens & Associates Pty Ltd
6/37 Leighton Place
Hornsby
NSW 2077

Attention: Gray Taylor

Sample log in details:

Your Reference:	<u>Malbec Properties Mundamia</u>
No. of samples:	52 soils
Date samples received / completed instructions received	11/01/13 / 11/01/13

Analysis Details:

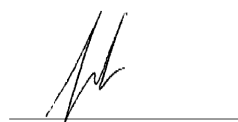
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date: 18/01/13 / 24/01/13
Date of Preliminary Report: Not Issued
NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:



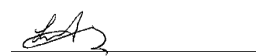
Jacinta Hurst
Laboratory Manager



Nancy Zhang
Chemist



Rhian Morgan
Reporting Supervisor



Lulu Guo
Approved Signatory



Jeremy Faircloth
Chemist

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	121	123	132	122	127

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil	84007-43 2193/RP05/B 10/01/2013 Soil	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	128	128	118	133	125

Client Reference: Malbec Properties Mundamia

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	84007-46	84007-47	84007-48	84007-51	84007-52
Your Reference	-----	2193/SP01/A	2193/SP01/B	2193/SP02/A	TRIPBLANK	TRIPSPIKE
Composite Reference	-----					
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	[NA]
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	[NA]
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	106%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	107%
Ethylbenzene	mg/kg	<1	<1	<1	<1	108%
m+p-xylene	mg/kg	<2	<2	<2	<2	108%
o-Xylene	mg/kg	<1	<1	<1	<1	109%
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	124	125	126	125	104

Client Reference: Malbec Properties Mundamia

svTRH (C10-C40) in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	53	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	22,000	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	36,000	150	320	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	160	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	160	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	52,000	120	290	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	9,700	<100	120	<100
Surrogate o-Terphenyl	%	107	#	104	104	103

svTRH (C10-C40) in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil	84007-43 2193/RP05/B 10/01/2013 Soil	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	101	102	100	99	99

svTRH (C10-C40) in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-46 2193/SP01/A 10/01/2013 Soil	84007-47 2193/SP01/B 10/01/2013 Soil	84007-48 2193/SP02/A 10/01/2013 Soil	84007-51 TRIPBLANK 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	210	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	420	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	62	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	62	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	470	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	280	<100	<100	<100
Surrogate o-Terphenyl	%	111	107	105	102

PAHs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	15/01/2013	15/01/2013	15/01/2013	15/01/2013	15/01/2013
Naphthalene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	1.4	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	3.6	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	5.7	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	1.7	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.79	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	mg/kg	<0.5	1	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d ₁₄	%	101	100	103	104	103

PAHs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil	84007-43 2193/RP05/B 10/01/2013 Soil	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	15/01/2013	15/01/2013	15/01/2013	15/01/2013	15/01/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d ₁₄	%	104	105	103	99	103

PAHs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-46 2193/SP01/A 10/01/2013 Soil	84007-47 2193/SP01/B 10/01/2013 Soil	84007-48 2193/SP02/A 10/01/2013 Soil	84007-51 TRIPBLANK 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	15/01/2013	15/01/2013	15/01/2013	15/01/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.6	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.8	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.4	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.5	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.7	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.50	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1	<0.1
Benzo(a)pyrene TEQ	mg/kg	<0.5	1	<0.5	<0.5
Surrogate p-Terphenyl-d ₁₄	%	107	101	109	127

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-22 2193/AreaB/B 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCMX	%	101	111	134	99	94

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-34 2193/AreaH/B 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	97	100	97	101

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil						
Our Reference:	UNITS	84007-43	84007-44	84007-45	84007-46	84007-47
Your Reference	-----	2193/RP05/B	2193/RP06/A	2193/RP07/B	2193/SP01/A	2193/SP01/B
Composite Reference	-----					
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	99	98	110	100

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil						
Our Reference:	UNITS	84007-48	84007-53	84007-54	84007-55	84007-56
Your Reference	-----	2193/SP02/A	C1	C2	C3	C4
Composite Reference	-----		1+2+3	4+5+6	7+8+9	+10+11+12
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	100	98	97	98

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil						
Our Reference:	UNITS	84007-57	84007-58	84007-59	84007-60	84007-61
Your Reference	-----	C5	C6	C7	C8	C9
Composite Reference	-----	13+14	15+16	17+18	23+24	25+26
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	0.8
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	1.3
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	94	93	96	96

Client Reference: Malbec Properties Mundamia

Organochlorine Pesticides in soil						
Our Reference:	UNITS	84007-62	84007-63	84007-64	84007-66	84007-67
Your Reference	-----	C10	C11	C12	C14	C15
Composite Reference	-----	27+28	29+30	31+32	35+36	37+38
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	94	102	83	92	90

Client Reference: Malbec Properties Mundamia

Organophosphorus Pesticides	UNITS	84007-19	84007-22	84007-34	84007-53	84007-54
Our Reference:	-----	2193/AreaA/ A	2193/AreaB/B	2193/AreaH/B	C1	C2
Your Reference	-----					
Composite Reference	-----				1+2+3	4+5+6
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	99	98	100	98

Organophosphorus Pesticides	UNITS	84007-55	84007-56	84007-57	84007-58	84007-59
Our Reference:	-----	C3	C4	C5	C6	C7
Your Reference	-----					
Composite Reference	-----	7+8+9	+10+11+12	13+14	15+16	17+18
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	98	100	94	93

Organophosphorus Pesticides		84007-60	84007-61	84007-62	84007-63	84007-64
Our Reference:	UNITS	C8	C9	C10	C11	C12
Your Reference	-----	23+24	25+26	27+28	29+30	31+32
Composite Reference	-----	10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	96	94	102	83

Organophosphorus Pesticides		84007-66	84007-67
Our Reference:	UNITS	C14	C15
Your Reference	-----	35+36	37+38
Composite Reference	-----	10/01/2013	10/01/2013
Date Sampled		Soil	Soil
Type of sample			
Date extracted	-	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013
Diazinon	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	90

Client Reference: Malbec Properties Mundamia

PCBs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arochlor 1016	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	111	134	94	97	100

PCBs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil	84007-43 2193/RP05/B 10/01/2013 Soil	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	97	101	98	99	98

PCBs in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-46 2193/SP01/A 10/01/2013 Soil	84007-47 2193/SP01/B 10/01/2013 Soil	84007-48 2193/SP02/A 10/01/2013 Soil
Date extracted	-	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013
Arochlor 1016	mg/kg	<1	<0.1	<0.1
Arochlor 1221	mg/kg	<1	<0.1	<0.1
Arochlor 1232	mg/kg	<1	<0.1	<0.1
Arochlor 1242	mg/kg	<1	<0.1	<0.1
Arochlor 1248	mg/kg	<1	<0.1	<0.1
Arochlor 1254	mg/kg	<1	<0.1	<0.1
Arochlor 1260	mg/kg	<1	<0.1	<0.1
Surrogate TCLMX	%	110	100	105

Client Reference: Malbec Properties Mundamia

Acid Extractable metals in soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-22 2193/AreaB/B 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	1.9	1.1	<0.5
Chromium	mg/kg	10	11	10	13	15
Copper	mg/kg	14	12	220	860	<1
Lead	mg/kg	27	36	210	180	4
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	4	3	7	10	2
Zinc	mg/kg	120	160	370	580	5

Acid Extractable metals in soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-34 2193/AreaH/B 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	5	<4	<4	<4
Cadmium	mg/kg	<0.5	12	<0.5	<0.5	<0.5
Chromium	mg/kg	15	28	13	7	14
Copper	mg/kg	1	37	6	4	5
Lead	mg/kg	4	200	23	12	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	13	3	<1	3
Zinc	mg/kg	8	2,200	230	48	29

Client Reference: Malbec Properties Mundamia

Acid Extractable metals in soil						
Our Reference:	UNITS	84007-43	84007-44	84007-45	84007-46	84007-47
Your Reference	-----	2193/RP05/B	2193/RP06/A	2193/RP07/B	2193/SP01/A	2193/SP01/B
Composite Reference	-----					
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	<4	6	<4
Cadmium	mg/kg	<0.5	<0.5	1.6	<0.5	<0.5
Chromium	mg/kg	14	15	8	19	6
Copper	mg/kg	11	2	3	39	88
Lead	mg/kg	50	6	18	19	25
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	3	2	13	5
Zinc	mg/kg	530	28	37	62	50

Acid Extractable metals in soil						
Our Reference:	UNITS	84007-48	84007-49	84007-50	84007-51	84007-53
Your Reference	-----	2193/SP02/A	DUP01	DUP02	TRIPBLANK	C1
Composite Reference	-----					1+2+3
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Chromium	mg/kg	11	11	8	2	11
Copper	mg/kg	3	7	2	<1	12
Lead	mg/kg	11	38	17	<1	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	2	1	<1	2
Zinc	mg/kg	33	340	29	2	18

Acid Extractable metals in soil						
Our Reference:	UNITS	84007-54	84007-55	84007-56	84007-57	84007-58
Your Reference	-----	C2	C3	C4	C5	C6
Composite Reference	-----	4+5+6	7+8+9	+10+11+12	13+14	15+16
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	<4	8	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	17	10	15	41	19
Copper	mg/kg	15	1	1	4	2
Lead	mg/kg	10	4	4	13	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	2	2	4	3
Zinc	mg/kg	35	5	5	24	10

Client Reference: Malbec Properties Mundamia

Acid Extractable metals in soil						
Our Reference:	UNITS	84007-59	84007-60	84007-61	84007-62	84007-63
Your Reference	-----	C7	C8	C9	C10	C11
Composite Reference	-----	17+18	23+24	25+26	27+28	29+30
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	8	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5
Chromium	mg/kg	23	18	18	10	11
Copper	mg/kg	<1	7	16	88	50
Lead	mg/kg	3	30	60	67	110
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	3	4	3	3
Zinc	mg/kg	9	230	240	320	960

Acid Extractable metals in soil					
Our Reference:	UNITS	84007-64	84007-66	84007-67	84007-68
Your Reference	-----	C12	C14	C15	2193/SP01/A
Composite Reference	-----	31+32	35+36	37+38	- Triplicate
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Date analysed	-	14/01/2013	14/01/2013	14/01/2013	14/01/2013
Arsenic	mg/kg	<4	<4	<4	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	14	7	17	16
Copper	mg/kg	20	10	23	47
Lead	mg/kg	56	9	57	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	1	6	12
Zinc	mg/kg	560	190	190	58

Client Reference: Malbec Properties Mundamia

Moisture Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-22 2193/AreaB/B 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	3.4	1.8	0.9	1.4	5.0

Moisture Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-34 2193/AreaH/B 10/01/2013 Soil	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	3.7	8.8	4.1	6.5	7.0

Moisture Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-43 2193/RP05/B 10/01/2013 Soil	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil	84007-46 2193/SP01/A 10/01/2013 Soil	84007-47 2193/SP01/B 10/01/2013 Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	4.4	2.9	6.3	2.0	9.3

Moisture Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-48 2193/SP02/A 10/01/2013 Soil	84007-49 DUP01 10/01/2013 Soil	84007-50 DUP02 10/01/2013 Soil	84007-51 TRIPBLANK 10/01/2013 Soil	84007-53 C1 1+2+3 10/01/2013 Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	3.7	3.6	3.5	[NT]	5.3

Moisture Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-54 C2 4+5+6 10/01/2013 Soil	84007-55 C3 7+8+9 10/01/2013 Soil	84007-56 C4 +10+11+12 10/01/2013 Soil	84007-57 C5 13+14 10/01/2013 Soil	84007-58 C6 15+16 10/01/2013 Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	7.5	12	6.5	55	37

Client Reference: Malbec Properties Mundamia

Moisture						
Our Reference:	UNITS	84007-59	84007-60	84007-61	84007-62	84007-63
Your Reference	-----	C7	C8	C9	C10	C11
Composite Reference	-----	17+18	23+24	25+26	27+28	29+30
Date Sampled		10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	14/01/13	14/01/13	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13	15/01/13	15/01/13
Moisture	%	10	5.3	3.8	3.7	5.3

Moisture				
Our Reference:	UNITS	84007-64	84007-66	84007-67
Your Reference	-----	C12	C14	C15
Composite Reference	-----	31+32	35+36	37+38
Date Sampled		10/01/2013	10/01/2013	10/01/2013
Type of sample		Soil	Soil	Soil
Date prepared	-	14/01/13	14/01/13	14/01/13
Date analysed	-	15/01/13	15/01/13	15/01/13
Moisture	%	12	2.6	4.3

Client Reference: Malbec Properties Mundamia

Asbestos ID - soils Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-20 2193/AreaA/ B 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil	84007-23 2193/AreaC/ A 10/01/2013 Soil	84007-25 2193/AreaD/ A 10/01/2013 Soil
Date analysed	-	17/01/2013	17/01/2013	17/01/2013	17/01/2013	17/01/2013
Sample mass tested	g	Approx 45g	Approx 45g	Approx 45g	Approx 45g	Approx 45g
Sample Description	-	Dark brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Black fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-27 2193/AreaE/A 10/01/2013 Soil	84007-31 2193/AreaG/ A 10/01/2013 Soil	84007-33 2193/AreaH/ A 10/01/2013 Soil	84007-35 2193/AreaI/A 10/01/2013 Soil	84007-37 2193/AreaJ/A 10/01/2013 Soil
Date analysed	-	17/01/2013	17/01/2013	17/01/2013	17/01/2013	17/01/2013
Sample mass tested	g	Approx 45g	Approx 45g	Approx 45g	Approx 45g	Approx 45g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Client Reference: Malbec Properties Mundamia

Asbestos ID - soils Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-39 2193/RP01/A 10/01/2013 Soil	84007-40 2193/RP02/A 10/01/2013 Soil	84007-41 2193/RP03/A 10/01/2013 Soil	84007-42 2193/RP04/A 10/01/2013 Soil	84007-43 2193/RP05/B 10/01/2013 Soil
Date analysed	-	17/01/2013	17/01/2013	17/01/2013	17/01/2013	17/01/2013
Sample mass tested	g	Approx 45g	Approx 45g	Approx 45g	Approx 45g	Approx 45g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-44 2193/RP06/A 10/01/2013 Soil	84007-45 2193/RP07/B 10/01/2013 Soil	84007-46 2193/SP01/A 10/01/2013 Soil	84007-47 2193/SP01/B 10/01/2013 Soil	84007-48 2193/SP02/A 10/01/2013 Soil
Date analysed	-	17/01/2013	17/01/2013	17/01/2013	17/01/2013	17/01/2013
Sample mass tested	g	Approx 45g	Approx 45g	Approx 45g	Approx 45g	Approx 45g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Dark brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Client Reference: Malbec Properties Mundamia

Trazine Herbicides in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-13 2193/DAM01/ A 10/01/2013 Soil	84007-15 2193/DAM02/ A 10/01/2013 Soil	84007-17 2193/DAM04/ A 10/01/2013 Soil	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil
Atrazine	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Hexazinone	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Metribuzine	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Prometryne	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Simazine	mg/kg	<0.1	<0.1	<0.1	<0.1	<1

Trazine Herbicides in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-23 2193/AreaC/ A 10/01/2013 Soil	84007-25 2193/AreaD/ A 10/01/2013 Soil	84007-27 2193/AreaE/A 10/01/2013 Soil	84007-31 2193/AreaG/ A 10/01/2013 Soil	84007-35 2193/AreaI/A 10/01/2013 Soil
Atrazine	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Hexazinone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzine	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Prometryne	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Simazine	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Trazine Herbicides in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-37 2193/AreaJ/A 10/01/2013 Soil
Atrazine	mg/kg	<0.1
Hexazinone	mg/kg	<0.1
Metribuzine	mg/kg	<0.1
Prometryne	mg/kg	<0.1
Simazine	mg/kg	<0.1

Client Reference: Malbec Properties Mundamia

Phenoxy Acid Herbicides in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-13 2193/DAM01/ A 10/01/2013 Soil	84007-15 2193/DAM02/ A 10/01/2013 Soil	84007-17 2193/DAM04/ A 10/01/2013 Soil	84007-19 2193/AreaA/ A 10/01/2013 Soil	84007-21 2193/AreaB/ A 10/01/2013 Soil
Date extracted	-	16/01/2013	16/01/2013	16/01/2013	16/01/2013	16/01/2013
Date analysed	-	18/01/2013	18/01/2013	18/01/2013	18/01/2013	18/01/2013
Dicamba	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
MCPA	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorprop	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-D	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-T	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-TP	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-DB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
MCPP	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Picloram	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Clopyralid	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluroxypyr	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Phenoxy Acid Herbicides in Soil Our Reference: Your Reference Composite Reference Date Sampled Type of sample	UNITS ----- -----	84007-23 2193/AreaC/ A 10/01/2013 Soil	84007-25 2193/AreaD/ A 10/01/2013 Soil	84007-27 2193/AreaE/A 10/01/2013 Soil	84007-31 2193/AreaG/ A 10/01/2013 Soil	84007-35 2193/AreaI/A 10/01/2013 Soil
Date extracted	-	16/01/2013	16/01/2013	16/01/2013	16/01/2013	16/01/2013
Date analysed	-	18/01/2013	18/01/2013	18/01/2013	18/01/2013	18/01/2013
Dicamba	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
MCPA	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorprop	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-D	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-T	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-TP	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-DB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
MCPP	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Picloram	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Clopyralid	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluroxypyr	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Phenoxy Acid Herbicides in Soil		
Our Reference:	UNITS	84007-37
Your Reference	-----	2193/AreaJ/A
Composite Reference	-----	
Date Sampled		10/01/2013
Type of sample		Soil
Date extracted	-	16/01/2013
Date analysed	-	18/01/2013
Dicamba	mg/kg	<0.1
MCPA	mg/kg	<0.1
Dichlorprop	mg/kg	<0.1
2,4-D	mg/kg	<0.1
2,4,5-T	mg/kg	<0.1
2,4,5-TP	mg/kg	<0.1
2,4-DB	mg/kg	<0.1
MCPP	mg/kg	<0.1
Triclopyr	mg/kg	<0.1
Picloram	mg/kg	<0.1
Clopyralid	mg/kg	<0.1
Fluroxypyr	mg/kg	<0.1

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 draft Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 draft Guideline on Investigation Levels for Soil and Groundwater.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Ext-020	Analysis subcontracted to Australian Government - National Measurement Institute. NATA Accreditation No: 198

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	84007-20	<25 <25	LCS-2	109%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	84007-20	<25 <25	LCS-2	109%
vTPHC ₆ - C ₁₀ less BTEX(F1)	mg/kg	25	Org-016	[NT]	84007-20	<25 <25	[NR]	[NR]
Benzene	mg/kg	0.2	Org-016	<0.2	84007-20	<0.2 <0.2	LCS-2	112%
Toluene	mg/kg	0.5	Org-016	<0.5	84007-20	<0.5 <0.5	LCS-2	107%
Ethylbenzene	mg/kg	1	Org-016	<1	84007-20	<1 <1	LCS-2	102%
m+p-xylene	mg/kg	2	Org-016	<2	84007-20	<2 <2	LCS-2	113%
o-Xylene	mg/kg	1	Org-016	<1	84007-20	<1 <1	LCS-2	114%
naphthalene	mg/kg	1	Org-014	<1	84007-20	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	115	84007-20	121 121 RPD: 0	LCS-2	118%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	84007-20	<50 <50	LCS-2	86%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	84007-20	<100 <100	LCS-2	107%
TRHC ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	84007-20	<100 <100	LCS-2	88%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	84007-20	<50 <50	LCS-2	86%
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	50	Org-003	[NT]	84007-20	<50 <50	[NR]	[NR]
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	84007-20	<100 <100	LCS-2	107%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	84007-20	<100 <100	LCS-2	88%
Surrogate o-Terphenyl	%		Org-003	99	84007-20	107 107 RPD: 0	LCS-2	117%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base Duplicate %RPD		
Date extracted	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			15/01/2013	84007-20	15/01/2013 15/01/2013	LCS-2	15/01/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	118%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	123%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	126%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	128%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	131%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	LCS-2	113%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	84007-20	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	84007-20	<0.05 <0.05	LCS-2	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Benzo(a)pyrene TEQ	mg/kg	0.5	Org-012 subset	[NT]	84007-20	<0.5 <0.5	[NR]	[NR]
Surrogate p-Terphenyl-d ₁₄	%		Org-012 subset	93	84007-20	101 100 RPD: 1	LCS-2	94%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base Duplicate %RPD		
Date extracted	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
HCB	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	103%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	118%
Heptachlor	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	100%
delta-BHC	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	114%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	106%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	102%
Dieldrin	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	104%
Endrin	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	107%
pp-DDD	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	112%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	LCS-2	111%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	99	84007-20	111 108 RPD: 3	LCS-2	98%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			14/01/2013	84007-53	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			14/01/2013	84007-53	14/01/2013 14/01/2013	LCS-2	14/01/2013
Diazinon	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	LCS-2	105%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	LCS-2	101%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	84007-53	<0.1 <0.1	LCS-2	107%
Surrogate TCMX	%		Org-008	99	84007-53	100 100 RPD: 0	LCS-2	104%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-2	14/01/2013
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	LCS-2	106%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	84007-20	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	99	84007-20	111 108 RPD: 3	LCS-2	104%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-1	14/01/2013
Date analysed	-			14/01/2013	84007-20	14/01/2013 14/01/2013	LCS-1	14/01/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	84007-20	<4 <4	LCS-1	95%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	84007-20	<0.5 <0.5	LCS-1	97%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	84007-20	11 10 RPD: 10	LCS-1	101%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	84007-20	12 11 RPD: 9	LCS-1	98%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	84007-20	36 33 RPD: 9	LCS-1	99%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	84007-20	<0.1 <0.1	LCS-1	104%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	84007-20	3 3 RPD: 0	LCS-1	100%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	84007-20	160 160 RPD: 0	LCS-1	100%
QUALITY CONTROL Moisture								
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				
QUALITY CONTROL Asbestos ID - soils								
Date analysed	-			[NT]				
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Trazine Herbicides in Soil						Base II Duplicate II %RPD		
Atrazine	mg/kg	0.1	Ext-020	<0.1	84007-37	<0.1 <0.1	[NR]	[NR]
Hexazinone	mg/kg	0.1	Ext-020	<0.1	84007-37	<0.1 <0.1	[NR]	[NR]
Metribuzine	mg/kg	0.1	Ext-020	<0.1	84007-37	<0.1 <0.1	[NR]	[NR]
Prometryne	mg/kg	0.1	Ext-020	<0.1	84007-37	<0.1 <0.1	[NR]	[NR]
Simazine	mg/kg	0.1	Ext-020	<0.1	84007-37	<0.1 <0.1	LCS-1	95%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Phenoxy Acid Herbicides in Soil						Base II Duplicate II %RPD		
Date extracted	-			16/01/2013	84007-13	16/01/2013 16/01/2013	LCS-1	16/01/2013
Date analysed	-			18/01/2013	84007-13	18/01/2013 18/01/2013	LCS-1	18/01/2013
Dicamba	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	96%
MCPA	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	98%
Dichlorprop	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	98%
2,4-D	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	96%
2,4,5-T	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	99%
2,4,5-TP	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	94%
2,4-DB	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	94%
MCPP	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	95%
Triclopyr	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	97%
Picloram	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	[NR]	[NR]
Clopyralid	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	[NR]	[NR]
Fluroxypyr	mg/kg	0.1	Ext-020	<0.1	84007-13	<0.1 <0.1	LCS-1	BN

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QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
TRHC ₆ - C ₉	mg/kg	84007-46	<25 <25	84007-21	106%
TRHC ₆ - C ₁₀	mg/kg	84007-46	<25 <25	84007-21	106%
VTPHC ₆ - C ₁₀ less BTEX(F1)	mg/kg	84007-46	<25 <25	[NR]	[NR]
Benzene	mg/kg	84007-46	<0.2 <0.2	84007-21	110%
Toluene	mg/kg	84007-46	<0.5 <0.5	84007-21	104%
Ethylbenzene	mg/kg	84007-46	<1 <1	84007-21	98%
m+p-xylene	mg/kg	84007-46	<2 <2	84007-21	110%
o-Xylene	mg/kg	84007-46	<1 <1	84007-21	109%
naphthalene	mg/kg	84007-46	<1 <1	[NR]	[NR]
Surrogate aaa- Trifluorotoluene	%	84007-46	124 119 RPD: 4	84007-21	119%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
TRHC ₁₀ - C ₁₄	mg/kg	84007-46	<50 <50	84007-21	#
TRHC ₁₅ - C ₂₈	mg/kg	84007-46	210 190 RPD: 10	84007-21	#
TRHC ₂₉ - C ₃₆	mg/kg	84007-46	420 490 RPD: 15	84007-21	#
TRH>C ₁₀ -C ₁₆	mg/kg	84007-46	62 62 RPD: 0	84007-21	#
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	84007-46	62 62 RPD: 0	[NR]	[NR]
TRH>C ₁₆ -C ₃₄	mg/kg	84007-46	470 480 RPD: 2	84007-21	#
TRH>C ₃₄ -C ₄₀	mg/kg	84007-46	280 300 RPD: 7	84007-21	#
Surrogate o-Terphenyl	%	84007-46	111 103 RPD: 7	84007-21	#
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-46	15/01/2013 15/01/2013	84007-21	15/01/2013
Naphthalene	mg/kg	84007-46	<0.1 <0.1	84007-21	95%
Acenaphthylene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	84007-46	<0.1 <0.1	84007-21	100%
Phenanthrene	mg/kg	84007-46	<0.1 <0.1	84007-21	123%
Anthracene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	84007-46	<0.1 <0.1	84007-21	#
Pyrene	mg/kg	84007-46	<0.1 <0.1	84007-21	#
Benzo(a)anthracene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	84007-46	<0.1 <0.1	84007-21	133%
Benzo(b+k)fluoranthene	mg/kg	84007-46	<0.2 <0.2	[NR]	[NR]

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QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	84007-46	<0.05 <0.05	84007-21	85%
Indeno(1,2,3-c,d)pyrene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Benzo(a)pyrene TEQ	mg/kg	84007-46	<0.5 <0.5	[NR]	[NR]
Surrogate p-Terphenyl- d ₁₄	%	84007-46	107 99 RPD: 8	84007-21	95%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-46	14/01/2013 14/01/2013	LCS-3	14/01/2013
Date analysed	-	84007-46	14/01/2013 14/01/2013	LCS-3	14/01/2013
HCB	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	84007-46	<0.1 <0.1	LCS-3	99%
gamma-BHC	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	84007-46	<0.1 <0.1	LCS-3	110%
Heptachlor	mg/kg	84007-46	<0.1 <0.1	LCS-3	76%
delta-BHC	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	84007-46	<0.1 <0.1	LCS-3	115%
Heptachlor Epoxide	mg/kg	84007-46	<0.1 <0.1	LCS-3	103%
gamma-Chlordane	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	84007-46	<0.1 <0.1	LCS-3	102%
Dieldrin	mg/kg	84007-46	<0.1 <0.1	LCS-3	99%
Endrin	mg/kg	84007-46	<0.1 <0.1	LCS-3	85%
pp-DDD	mg/kg	84007-46	<0.1 <0.1	LCS-3	91%
Endosulfan II	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	84007-46	<0.1 <0.1	LCS-3	108%
Methoxychlor	mg/kg	84007-46	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%	84007-46	110 102 RPD: 8	LCS-3	100%

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QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-63	14/01/2013 14/01/2013	LCS-3	14/01/2013
Date analysed	-	84007-63	14/01/2013 14/01/2013	LCS-3	14/01/2013
Diazinon	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	84007-63	<0.1 <0.1	LCS-3	105%
Fenitrothion	mg/kg	84007-63	<0.1 <0.1	LCS-3	104%
Bromophos-ethyl	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	84007-63	<0.1 <0.1	LCS-3	112%
Surrogate TCMX	%	84007-63	102 92 RPD: 10	LCS-3	106%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-46	14/01/2013 14/01/2013	84007-21	14/01/2013
Arochlor 1016	mg/kg	84007-46	<1 <1	[NR]	[NR]
Arochlor 1221	mg/kg	84007-46	<1 <1	[NR]	[NR]
Arochlor 1232	mg/kg	84007-46	<1 <1	[NR]	[NR]
Arochlor 1242	mg/kg	84007-46	<1 <1	[NR]	[NR]
Arochlor 1248	mg/kg	84007-46	<1 <1	[NR]	[NR]
Arochlor 1254	mg/kg	84007-46	<1 <1	84007-21	131%
Arochlor 1260	mg/kg	84007-46	<1 <1	[NR]	[NR]
Surrogate TCLMX	%	84007-46	110 102 RPD: 8	84007-21	92%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	84007-46	14/01/2013 14/01/2013	LCS-2	14/01/2013
Date analysed	-	84007-46	14/01/2013 14/01/2013	LCS-2	14/01/2013
Arsenic	mg/kg	84007-46	6 6 RPD: 0	LCS-2	91%
Cadmium	mg/kg	84007-46	<0.5 <0.5	LCS-2	93%
Chromium	mg/kg	84007-46	19 25 RPD: 27	LCS-2	98%
Copper	mg/kg	84007-46	39 38 RPD: 3	LCS-2	97%
Lead	mg/kg	84007-46	19 35 RPD: 59	LCS-2	94%
Mercury	mg/kg	84007-46	<0.1 <0.1	LCS-2	106%
Nickel	mg/kg	84007-46	13 12 RPD: 8	LCS-2	97%
Zinc	mg/kg	84007-46	62 61 RPD: 2	LCS-2	96%

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QUALITY CONTROL Trazine Herbicides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Atrazine	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexazinone	mg/kg	[NT]	[NT]	[NR]	[NR]
Metribuzine	mg/kg	[NT]	[NT]	[NR]	[NR]
Prometryne	mg/kg	[NT]	[NT]	[NR]	[NR]
Simazine	mg/kg	[NT]	[NT]	84007-37	96%
QUALITY CONTROL Phenoxy Acid Herbicides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	84007-15	16/01/2013
Date analysed	-	[NT]	[NT]	84007-15	18/01/2013
Dicamba	mg/kg	[NT]	[NT]	84007-15	84%
MCPA	mg/kg	[NT]	[NT]	84007-15	96%
Dichlorprop	mg/kg	[NT]	[NT]	84007-15	105%
2,4-D	mg/kg	[NT]	[NT]	84007-15	112%
2,4,5-T	mg/kg	[NT]	[NT]	84007-15	108%
2,4,5-TP	mg/kg	[NT]	[NT]	84007-15	115%
2,4-DB	mg/kg	[NT]	[NT]	84007-15	113%
MCPP	mg/kg	[NT]	[NT]	84007-15	111%
Triclopyr	mg/kg	[NT]	[NT]	84007-15	112%
Picloram	mg/kg	[NT]	[NT]	[NR]	[NR]
Clopyralid	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluroxypyr	mg/kg	[NT]	[NT]	84007-15	61%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-53	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-53	14/01/2013 14/01/2013	84007-21	14/01/2013
HCB	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	84007-53	<0.1 <0.1	84007-21	100%
gamma-BHC	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	84007-53	<0.1 <0.1	84007-21	107%
Heptachlor	mg/kg	84007-53	<0.1 <0.1	84007-21	98%
delta-BHC	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	84007-53	<0.1 <0.1	84007-21	118%
Heptachlor Epoxide	mg/kg	84007-53	<0.1 <0.1	84007-21	104%
gamma-Chlordane	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	84007-53	<0.1 <0.1	84007-21	87%
Dieldrin	mg/kg	84007-53	<0.1 <0.1	84007-21	86%
Endrin	mg/kg	84007-53	<0.1 <0.1	84007-21	102%
pp-DDD	mg/kg	84007-53	<0.1 <0.1	84007-21	100%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Endosulfan II	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	84007-53	<0.1 <0.1	84007-21	112%
Methoxychlor	mg/kg	84007-53	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%	84007-53	100 100 RPD: 0	84007-21	112%
QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-63	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-63	14/01/2013 14/01/2013	84007-21	14/01/2013
Diazinon	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	84007-63	<0.1 <0.1	84007-21	121%
Fenitrothion	mg/kg	84007-63	<0.1 <0.1	84007-21	110%
Bromophos-ethyl	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	84007-63	<0.1 <0.1	84007-21	73%
Surrogate TCMX	%	84007-63	102 92 RPD: 10	84007-21	121%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	84007-53	14/01/2013 14/01/2013	LCS-3	14/01/2013
Date analysed	-	84007-53	14/01/2013 14/01/2013	LCS-3	14/01/2013
Arsenic	mg/kg	84007-53	<4 <4	LCS-3	92%
Cadmium	mg/kg	84007-53	<0.5 <0.5	LCS-3	95%
Chromium	mg/kg	84007-53	11 12 RPD: 9	LCS-3	100%
Copper	mg/kg	84007-53	12 11 RPD: 9	LCS-3	99%
Lead	mg/kg	84007-53	6 5 RPD: 18	LCS-3	96%
Mercury	mg/kg	84007-53	<0.1 <0.1	LCS-3	103%
Nickel	mg/kg	84007-53	2 3 RPD: 40	LCS-3	98%
Zinc	mg/kg	84007-53	18 17 RPD: 6	LCS-3	97%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	84007-63	14/01/2013 14/01/2013	84007-54	14/01/2013
Date analysed	-	84007-63	14/01/2013 14/01/2013	84007-54	14/01/2013
HCB	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	84007-63	<0.1 <0.1	84007-54	102%
gamma-BHC	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	84007-63	<0.1 <0.1	84007-54	111%
Heptachlor	mg/kg	84007-63	<0.1 <0.1	84007-54	81%
delta-BHC	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	84007-63	<0.1 <0.1	84007-54	116%
Heptachlor Epoxide	mg/kg	84007-63	<0.1 <0.1	84007-54	102%
gamma-Chlordane	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	84007-63	<0.1 <0.1	84007-54	99%
Dieldrin	mg/kg	84007-63	<0.1 <0.1	84007-54	99%
Endrin	mg/kg	84007-63	<0.1 <0.1	84007-54	81%
pp-DDD	mg/kg	84007-63	<0.1 <0.1	84007-54	97%
Endosulfan II	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	84007-63	<0.1 <0.1	84007-54	105%
Methoxychlor	mg/kg	84007-63	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%	84007-63	102 92 RPD: 10	84007-54	97%

Client Reference: Malbec Properties Mundamia

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	84007-54	14/01/2013
Date analysed	-	[NT]	[NT]	84007-54	14/01/2013
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	[NT]	[NT]	84007-54	100%
Fenitrothion	mg/kg	[NT]	[NT]	84007-54	95%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	84007-54	91%
Surrogate TCMX	%	[NT]	[NT]	84007-54	104%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	84007-63	14/01/2013 14/01/2013	84007-21	14/01/2013
Date analysed	-	84007-63	14/01/2013 14/01/2013	84007-21	14/01/2013
Arsenic	mg/kg	84007-63	<4 <4	84007-21	98%
Cadmium	mg/kg	84007-63	<0.5 <0.5	84007-21	95%
Chromium	mg/kg	84007-63	11 15 RPD: 31	84007-21	97%
Copper	mg/kg	84007-63	50 57 RPD: 13	84007-21	130%
Lead	mg/kg	84007-63	110 130 RPD: 17	84007-21	129%
Mercury	mg/kg	84007-63	<0.1 <0.1	84007-21	102%
Nickel	mg/kg	84007-63	3 3 RPD: 0	84007-21	96%
Zinc	mg/kg	84007-63	960 1000 RPD: 4	84007-21	103%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	84007-54	14/01/2013
Date analysed	-	[NT]	[NT]	84007-54	14/01/2013
Arsenic	mg/kg	[NT]	[NT]	84007-54	91%
Cadmium	mg/kg	[NT]	[NT]	84007-54	92%
Chromium	mg/kg	[NT]	[NT]	84007-54	99%
Copper	mg/kg	[NT]	[NT]	84007-54	108%
Lead	mg/kg	[NT]	[NT]	84007-54	92%
Mercury	mg/kg	[NT]	[NT]	84007-54	112%
Nickel	mg/kg	[NT]	[NT]	84007-54	98%
Zinc	mg/kg	[NT]	[NT]	84007-54	97%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteriae has been exceeded for 84007-46 for Pb. Therefore a triplicate result has been issued as laboratory sample number 84007-68.

Total Recoverable Hydrocarbons in soil (NEPM):# Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

PAH's in soil:PQL has been raised due to the sample matrix requiring dilution.
Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

OC/PCB's in soil:PQL has been raised due to interference from analytes(other than those being tested) in the sample/s.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Triazine Herbicides & Phenoxy acid herbicides analysed by NMI. Report No.RN953495.

Asbestos ID was analysed by Approved Identifier: Alex Tam

Asbestos ID was authorised by Approved Signatory: Lulu Guo

INS: Insufficient sample for this test

NA: Test not required

<: Less than

PQL: Practical Quantitation Limit

RPD: Relative Percent Difference

>: Greater than

NT: Not tested

NA: Test not required

LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

Project												
Name	Contamination Assessment: Malbec Properties Mundamia											
Martens Contact Officer	Gray Taylor					Contact Email	gtaylor@martens.com					
Sampling and Shipping	Sample Date	10/01/13		Dispatch Date	11/01/13		Turnaround Time	Normal				
	Our Reference	P0802193JC03V01 COC				Shipping Method (X)	Hand		Post		Courier	X
	On Ice (X)	X	No Ice (X)		Other (X)							
Laboratory												
Name	Envirolab Services P/L											
Sample Delivery Address	12 Ashley St, Chatswood											
Delivery Contact	Name	Aileen Hie		Phone	02 9910 6200		Fax		Email	ahie@envirolabservices.com.au		
Please Send Report By (X)	Post		Fax		Email	X	Reporting Email Address	gtaylor@martens.com				

Sample ID	Combo 5A (soil)	Combo 3 (Soil)	BTEX	ASBESTOS	HERBICIDES	8HM	OCP/OPP	COMPOSITE	Ferric Iron, and Total Iron	Sulfate	Phosphorous	Hold	Date Sampled
1 2193/401/0.05								53 C1					
2 2193/402/0.05						X	X	Y					
3 2193/403/0.05													
4 2193/404/0.05								54 C2					
5 2193/405/0.05						X	X	Y					
6 2193/406/0.05													
7 2193/407/0.05								55 C3					
8 2193/408/0.05						X	X	Y					
9 2193/409/0.05													
10 2193/410/0.05								56 C4					
11 2193/411/0.05						X	X	Y					
12 2193/412/0.05													
13 2193/DAM01/A					X			57 C5					
14 2193/DAM01/B						X	X	Y					

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 84007

Date Received: 11/1/13
Time Received: 12:30
Received by: JHie
Temp: Cool/Ambient
Cooling: Icepack
Security: Intact/Damaged/None

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84007 -

[illegible]

SOIL ANALYSIS CHAIN OF CUSTODY

Page of

84007 -

Sample ID	Combo 5A (soil)	Combo 3 (Soil)	BTEX	ASBESTOS	HERBICIDES	BHM	OCP/OPP	COMPOSITE	Ferric Iron, and Total Iron	Sulfate	Phosphorous	Hold	Date Sampled
45 2193/RP07/B	X												
46 2193/SP01/A	X												
47 2193/SP01/B	X												
48 2193/SP02/A	X												
49 DUP01						X							
50 DUP02						X							
51 Trip Blank		X											
52 Trip Spike			X										

Notes

Herbicides are Phenoxy Acid and Triazine

12 **Attachment C – Borehole Logs**

CLIENT		Twynam Property Group		COMMENCED	10.01.2013	COMPLETED	10.01.2013	REF		BH401	
PROJECT		Stage 2 Contamination Assessment		LOGGED	GT	CHECKED	AN	Sheet		1 of 1	
SITE		Mundamia Release Lands		GEOLOGY	Sandstone	VEGETATION	Grasses	PROJECT NO.		P0802193	
EQUIPMENT		Hydraulic Auger		EASTING	NA	RL SURFACE	NA				
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth		NORTHING	NA	ASPECT	South East	SLOPE	1-2%		

EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING					
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.2			ML	SILT - Light grey/brown, fine grained sand.			E	0.05	2193/401/ 0.05
V	Nil	N	D	0.3			SP	SAND - Light brown/grey.			E	0.25	2193/401/ 0.25
V	Nil	N	D	0.5			SP	SAND - Orange, fine to medium grained.					
V	Nil	N	M	1.0			SC	CLAYEY SAND - Orange/red.			E	1.0	2193/401/ 1.0
				1.5				Borehole terminated at 1.0m on clayey sand.					
				2.0									
				2.25									

EQUIPMENT / METHOD	SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
N Natural exposure X Existing excavation BH Backhoe bucket HA Hand auger E Excavator CC Concrete Corer V V-Bit TC Tungsten Carbide Bit S Spade	SH Shoring SC Shotcrete RB Rock Bolts Nil No support	N None observed X Not measured ▽ Water level △ Water outflow ▽ Water inflow	D Dry M Moist W Wet Wp Plastic limit Wl Liquid limit	L Low M Moderate H High R Refusal	VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard F Friable	VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	A Auger sample B Bulk sample U Undisturbed sample D Disturbed sample M Moisture content Ux Tube sample (x mm) E Environmental sample (JAR)	pp Pocket penetrometer S Standard penetration test VS Vane shear DCP Dynamic cone penetrometer FD Field density WS Water sample PID Photo Ionization Detector
								Y USCS N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

Martens

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Engineering Log - Borehole

Quality Sheet No. 4

CLIENT		Twynam Property Group		COMMENCED	10.01.2013	COMPLETED	10.01.2013	REF BH403 Sheet 1 of 1 PROJECT NO. P0802193					
PROJECT		Stage 2 Contamination Assessment		LOGGED	GT	CHECKED	AN						
SITE		Mundamia Release Lands		GEOLOGY	Sandstone	VEGETATION	Grasses						
EQUIPMENT		Hydraulic Auger		EASTING	NA	RL SURFACE	NA						
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth		NORTHING	NA	ASPECT	North East	SLOPE	1-2%				
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING					
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/403/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.			E	0.25	2193/403/ 0.25
V	Nil	N	D	1.0			SP	SAND - Orange, minor clay content, medium grained.			E	0.5	2193/403/ 0.5
				1.5				Borehole terminated at 1.0m on sand.					
				2.0									
				2.25									
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION			
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer			
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test			
BH Backhoe bucket		RB Rock Bolts	▽ Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear			
HA Hand auger		Nil No support	△ Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer			
E Excavator			▽ Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density			
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample			
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector			
TC Tungsten Carbide Bit													
S Spade													
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS													
 (C) Copyright Martens & Associates Pty. Ltd . 2013		MARTENS & ASSOCIATES PTY LTD 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 mail@martens.com.au WEB: http://www.martens.com.au						Engineering Log - Borehole					

CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH404				
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1				
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193				
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE		NA				
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth			NORTHING	NA		ASPECT		North East				
									SLOPE		1-2%			
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING						
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.08			ML	SILT - Light brown/grey, minor gravels.				E	0.05	2193/404/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.				E	0.25	2193/404/ 0.25
V	Nil	N	D	1.0			SP	SAND - Orange, minor clay content, medium grained.				E	0.5	2193/404/ 0.5
				1.5				Borehole terminated at 1.0m on sand.						
				2.0										
				2.25										
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION				
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer				
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test				
BH Backhoe bucket		RB Rock Bolts	▽ Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear				
HA Hand auger		Nil No support	△ Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer				
E Excavator			▽ Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density				
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample				
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector				
TC Tungsten Carbide Bit														
S Spade														
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH405																					
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1																					
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193																					
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE	NA																						
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth			NORTHING	NA		ASPECT	South East		SLOPE 1-2%																				
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING																							
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS																		
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/405/ 0.05																		
V	Nil	N	D	0.35			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.																							
V	Nil	N	D	0.5			SC	CLAYEY SAND - Orange/brown.			E	0.5	2193/405/ 0.5																		
V	Nil	N	M	1.0			CL	SANDY CLAY - Grey with minor red/orange mottles.																							
				1.5				Borehole terminated at 1.0m on sandy clay.																							
				2.0																											
				2.25																											
EQUIPMENT / METHOD N Natural exposure X Existing excavation BH Backhoe bucket HA Hand auger E Excavator CC Concrete Corer V V-Bit TC Tungsten Carbide Bit S Spade														SUPPORT SH Shoring SC Shotcrete RB Rock Bolts Nil No support		WATER N None observed X Not measured Water level Water outflow Water inflow		MOISTURE D Dry M Moist W Wet Wp Plastic limit Wl Liquid limit		PENETRATION L Low M Moderate H High R Refusal		CONSISTENCY VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard F Friable		DENSITY VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense		SAMPLING & TESTING A Auger sample B Bulk sample U Undisturbed sample D Disturbed sample M Moisture content Ux Tube sample (x mm) E Environmental sample (JAR)		pp Pocket penetrometer S Standard penetration test VS Vane shear DCP Dynamic cone penetrometer FD Field density WS Water sample PID Photo Ionization Detector		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION USCS Agricultural	
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS																															
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH406				
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1				
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193				
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE	NA					
EXCAVATION DIMENSIONS		0.1mØ X 0.45m depth			NORTHING	NA		ASPECT	South		SLOPE 1-2%			
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING						
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.				E	0.05	2193/406/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.				E	0.25	2193/406/ 0.25
				0.45								E	0.4	2193/406/ 0.4
				0.5				Borehole terminated at 0.45m on extremely/ moderately weathered sandstone.						0.5
				1.0										1.0
				1.5										1.5
				2.0										2.0
				2.25										2.25
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION				
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer				
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test				
BH Backhoe bucket		RB Rock Bolts	Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear				
HA Hand auger		Nil No support	Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer				
E Excavator			Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density				
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample				
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector				
TC Tungsten Carbide Bit														
S Spade														
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH407																							
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1																							
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193																							
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE	NA																								
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth			NORTHING	NA		ASPECT	West		SLOPE 1-2%																						
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING																									
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS																				
V	Nil	N	D	0.2			ML	SILT - Light grey, minor sand, floury.			E	0.05	2193/407/ 0.05																				
V	Nil	N	D	0.35			CL	SANDY CLAY - Grey/brown, minor gravels.			E	0.25	2193/407/ 0.25																				
V	Nil	N	D	0.5			CL	SANDY CLAY - Yellow/orange, tending to extremely weathered sandstone >0.75m.			E	0.5	2193/407/ 0.5																				
			M	1.0				Borehole terminated at 1.0m on extremely weathered sandstone.																									
				1.5																													
				2.0																													
				2.25																													
EQUIPMENT / METHOD N Natural exposure X Existing excavation BH Backhoe bucket HA Hand auger E Excavator CC Concrete Corer V V-Bit TC Tungsten Carbide Bit S Spade														SUPPORT SH Shoring SC Shotcrete RB Rock Bolts Nil No support		WATER N None observed X Not measured Water level Water outflow Water inflow		MOISTURE D Dry M Moist W Wet Wp Plastic limit Wl Liquid limit		PENETRATION L Low M Moderate H High R Refusal		CONSISTENCY VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard F Friable		DENSITY VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense		SAMPLING & TESTING A Auger sample B Bulk sample U Undisturbed sample D Disturbed sample M Moisture content Ux Tube sample (x mm) E Environmental sample (JAR)		pp Pocket penetrometer S Standard penetration test VS Vane shear DCP Dynamic cone penetrometer FD Field density WS Water sample PID Photo Ionization Detector		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural			
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS																																	
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH408				
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1				
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193				
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE	NA					
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth			NORTHING	NA		ASPECT	North		SLOPE 1-2%			
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING						
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.15			ML	SILT - Grey/light brown, fine grained sand, minor gravels.				E	0.05	2193/408/ 0.05
V	Nil	N	D	0.45			SP	SAND - Yellow/gold, minor sandstone gravels (1-10mm, ≈10%).				E	0.25	2193/408/ 0.25
V	Nil	N	M	0.9			SC	CLAYEY SAND/EXTREMELY WEATHERED SANDSTONE - Orange/gold/brown/red.						0.5
V	Nil	N	D	1.0			CL	SANDY CLAY/EXTREMELY WEATHERED SANDSTONE - Red/grey/yellow, gravels.						1.0
				1.5				Borehole terminated at 1.0m on sandy clay.						1.5
				2.0										2.0
				2.25										2.25
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION				
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer				
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test				
BH Backhoe bucket		RB Rock Bolts	▽ Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear				
HA Hand auger		Nil No support	△ Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer				
E Excavator			▽ Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density				
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample				
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector				
TC Tungsten Carbide Bit														
S Spade														
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF BH409			
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1			
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193			
EQUIPMENT		Hydraulic Auger			EASTING	NA		RL SURFACE	NA				
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth			NORTHING	NA		ASPECT	West		SLOPE 1-2%		
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING					
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.15			ML	SILT - Brown, fine grained sand, gravels (1-20mm, ≈10%).			E	0.05	2193/409/ 0.05
V	Nil	N	D	0.3			SM	SILTY SAND - Light brown/orange.			E	0.25	2193/409/ 0.25
V	Nil	N	D	0.5			SP	SAND - Yellow/gold, minor sandstone gravels (1-10mm, ≈10%).			E	0.5	2193/409/ 0.5
V	Nil	N	M	1.0			SC	CLAYEY SAND/EXTREMELY WEATHERED SANDSTONE - Orange/gold/brown/red.					
				1.5				Borehole terminated at 1.0m on clayey sand.					
				2.0									
				2.25									
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION			
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer			
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test			
BH Backhoe bucket		RB Rock Bolts	▽ Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear			
HA Hand auger		Nil No support	△ Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer			
E Excavator			▽ Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density			
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample			
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector			
TC Tungsten Carbide Bit													
S Spade													
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS													
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CLIENT		Twynam Property Group		COMMENCED	10.01.2013	COMPLETED	10.01.2013	REF BH410	
PROJECT		Stage 2 Contamination Assessment		LOGGED	GT	CHECKED	AN	Sheet 1 of 1	
SITE		Mundamia Release Lands		GEOLOGY	Sandstone	VEGETATION	Grasses	PROJECT NO. P0802193	
EQUIPMENT		Hydraulic Auger		EASTING	NA	RL SURFACE	NA		
EXCAVATION DIMENSIONS		0.1mØ X 1.0m depth		NORTHING	NA	ASPECT	North	SLOPE	1-2%

EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING					
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.05			ML	SILT - Grey/light brown, fine grained sand, minor gravels.			E	0.05	2193/410/ 0.05
V	Nil	N	D	0.3			SM	SILTY SAND - Light brown, brown.			E	0.25	2193/410/ 0.25
V	Nil	N	D	0.5			SP	SAND - Yellow/gold, minor sandstone gravels (1-10mm, ≈10%).					
V	Nil	N	M	1.0			SC	CLAYEY SAND/EXTREMELY WEATHERED SANDSTONE - Orange/gold/brown/red.			E	1.0	2193/410/ 1.0
				1.5				Borehole terminated at 1.0m on extremely weathered sandstone.					
				2.0									
				2.25									

EQUIPMENT / METHOD	SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
N Natural exposure X Existing excavation BH Backhoe bucket HA Hand auger E Excavator CC Concrete Corer V V-Bit TC Tungsten Carbide Bit S Spade	SH Shoring SC Shotcrete RB Rock Bolts Nil No support	N None observed X Not measured ▽ Water level △ Water outflow ▽ Water inflow	D Dry M Moist W Wet Wp Plastic limit Wl Liquid limit	L Low M Moderate H High R Refusal	VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard F Friable	VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	A Auger sample B Bulk sample U Undisturbed sample D Disturbed sample M Moisture content Ux Tube sample (x mm) E Environmental sample (JAR)	pp Pocket penetrometer S Standard penetration test VS Vane shear DCP Dynamic cone penetrometer FD Field density WS Water sample PID Photo Ionization Detector

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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF TP411				
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1				
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193				
EQUIPMENT		Spade			EASTING	NA		RL SURFACE		NA				
EXCAVATION DIMENSIONS		0.2 X 0.2 X 0.25m depth			NORTHING	NA		ASPECT		South East				
SLOPE									1-2%					
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING						
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
S	Nil	N	D	0.25			SM	SILTY SAND - Orange/gold, fine grained sand.				E	0.05	2193/411/ 0.05
				0.25				Test pit terminated at 0.25m on silty sand.				E	0.25	2193/411/ 0.25
				0.5										
				1.0										
				1.5										
				2.0										
				2.25										
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION				
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer				
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test				
BH Backhoe bucket		RB Rock Bolts	Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear				
HA Hand auger		Nil No support	Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer				
E Excavator			Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density				
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample				
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector				
TC Tungsten Carbide Bit														
S Spade														
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
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CLIENT	Twynam Property Group			COMMENCED	10.01.2013		COMPLETED	10.01.2013		REF TP412				
PROJECT	Stage 2 Contamination Assessment			LOGGED	GT		CHECKED	AN		Sheet 1 of 1				
SITE	Mundamia Release Lands			GEOLOGY	Sandstone		VEGETATION	Grasses		PROJECT NO. P0802193				
EQUIPMENT		Spade			EASTING	NA		RL SURFACE	NA					
EXCAVATION DIMENSIONS		0.2 X 0.2 X 0.3m depth			NORTHING	NA		ASPECT	South		SLOPE 1-2%			
EXCAVATION DATA				MATERIAL DATA				SAMPLING & TESTING						
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
S	Nil	N	D	0.1			ML	SILT - Brown/light brown, minor gravels (1-5mm, ≈5%).				E	0.05	2193/412/ 0.05
S	Nil	N	D	0.3			SM	SILTY SAND - Orange/gold, fine grained sand.				E	0.25	2193/412/ 0.25
				0.5				Test pit terminated at 0.3m on silty sand.						
				1.0										
				1.5										
				2.0										
				2.25										
EQUIPMENT / METHOD		SUPPORT	WATER	MOISTURE	PENETRATION	CONSISTENCY	DENSITY	SAMPLING & TESTING		CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION				
N Natural exposure		SH Shoring	N None observed	D Dry	L Low	VS Very Soft	VL Very Loose	A Auger sample		pp Pocket penetrometer				
X Existing excavation		SC Shotcrete	X Not measured	M Moist	M Moderate	S Soft	L Loose	B Bulk sample		S Standard penetration test				
BH Backhoe bucket		RB Rock Bolts	Water level	W Wet	H High	F Firm	MD Medium Dense	U Undisturbed sample		VS Vane shear				
HA Hand auger		Nil No support	Water outflow	Wp Plastic limit	R Refusal	St Stiff	D Dense	D Disturbed sample		DCP Dynamic cone penetrometer				
E Excavator			Water inflow	WI Liquid limit		VSt Very Stiff	VD Very Dense	M Moisture content		FD Field density				
CC Concrete Corer						H Hard		Ux Tube sample (x mm)		WS Water sample				
V V-Bit						F Friable		E Environmental sample (JAR)		PID Photo Ionization Detector				
TC Tungsten Carbide Bit														
S Spade														
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
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13 **Attachment D – Data Validation Report**

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

1. Sample Handling

	Yes	No (Comments below)
a. Were sample holding times met?	✓	
b. Were samples in proper custody between the field and reaching the laboratory?	✓	
c. Were the samples properly and adequately preserved?	✓	
d. Were the samples received by the laboratory in good condition?	✓	

COMMENTS

Sample handling is:

- ✓ Satisfactory
- Partially Satisfactory
- Unsatisfactory

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

2. Precision / Accuracy Statement

	Yes	No (Comments below)
a. Was a NATA registered laboratory used?	✓	
b. Did the laboratory perform the requested tests?	✓	
c. Were laboratory methods adopted NATA endorsed?	✓	
d. Were appropriate test procedures followed?	✓	
e. Were reporting limits satisfactory?	✓	
f. Was the NATA Seal on the reports?	✓	
g. Were reports signed by an authorised person?	✓	

COMMENTS

Precision / Accuracy of the Laboratory Report:

✓

Satisfactory

Partially Satisfactory

Unsatisfactory

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

3. Field Quality Assurance / Quality Control (QA/QC)

	Media	Number
a. Number of Primary Samples analysed (does not include duplicates)	Soil:	48
	Water:	-
b. Number of days of sampling		2
c. Number and Type of QA/QC Samples analysed	Soil	Water
Intra-Laboratory Field Duplicates	2	
Inter-Laboratory Field triplicates		
Trip Blanks	1	
Wash Blanks		
Other (Field Blanks, Spikes, Trip Blanks, etc.)	1	

Field Duplicates

	Yes	No (Comments below)
Adequate Numbers of intra-laboratory field duplicates analysed?	✓	
Adequate Numbers of inter-laboratory field duplicates analysed?	✓	
Were RPDs within Control Limits?		
i. Organics (+ 50%)	✓	
ii. Metals / Inorganics (+ 50%)		✓
iii. Nutrients (+ 50%)		N/A

COMMENTS

.
RPD for Cadmium is greater than 50% for 2193/Dup2 (91%) however the concentration levels are less than 5 times the LOR and is therefore considered an acceptable result.
RPD for Nickel is greater than 50% for 2193/Dup2 (67%) however the concentration levels are less than 5 times the LOR and is therefore considered an acceptable result.

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

Trip Blank / Wash Blanks

	Yes	No (Comments below)
Were Adequate Numbers of trip blanks analysed?	✓	
Were Adequate Numbers of wash blanks analysed?	✓	
Were the Trip Blanks free of contaminants?	✓	
Were the Wash Blanks free of contaminants? <i>(If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)</i>	✓	

COMMENTS

Trip Spikes

	Yes	No (Comments below)
Were adequate numbers of Trip Spikes analysed?	✓	
Were the Trip Spike results within control limits?	✓	

COMMENTS

Field QA/QC:

✓

Satisfactory

Partially
Satisfactory

Unsatisfactory

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

DATA VALIDATION REPORT - STAGE 2- Mundamia Lands Release

3. Laboratory Internal Quality Assurance / Quality Control (QA/QC) Procedures

a. Type and Number of QA/QC Samples

QA/QC Type	Yes	No
Laboratory Blanks/Reagent Blanks (at least 1 per batch)	✓	
Matrix Spikes/Matrix Spike Duplicates (1 for each soil type)	✓	
Laboratory Control Samples	✓	
Laboratory Duplicates (at least one per batch or 1 per 10 samples, whichever is smaller)	✓	
Surrogates (where appropriate) ¹	✓	

¹ Number of surrogate spikes carried out on each sample

	Yes	No (Comments below)
b. Were the laboratory blanks/reagents blanks free of contamination?	✓	
c. Were the spike recoveries within control limits?	✓	
d. Were the RPDs of the laboratory duplicates within control limits?		
i. Organics (0 - 50%)	✓	
ii. Metals / Inorganics (0 - 50 %)		✓
e. Were the surrogate recoveries within control limits?	✓	

COMMENTS

RPD was exceeded in laboratory referenced sample: 84007-46 for lead. A triplicate results was subsequently issued as laboratory sample number 84007 – 68. Concentrations for lead were below adopted HIL for all three samples and results are considered acceptable for use.

Laboratory internal QA / QC is:	✓	Satisfactory
		Partially Satisfactory
		Unsatisfactory

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4. Summary of Quality Assurance / Quality Control (QA/QC)

QA/QC Type	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	✓		
Precision / Accuracy of the Laboratory Report	✓		
Field QA / QC	✓		
Laboratory Internal QA / QC	✓		

5. Data Usability

1. Data directly usable ✓
2. Data usable with the following corrections/modifications
(see comment below)
3. Data not usable.

COMMENTS
