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## Appendix C

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Tabulated Results Tables

COCs

NATA Laboratory Reports



As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Nitrate	Nitrite
NT									
NT									
NT									
NT									

**Asbestos Impacted Soil**

Chloropyrifos	Methoxychlor	HCB	Endrin	Endosulfan	DDE	DDD	DDT	DDT+DDD+DDE	Chlordane	Aldrin +Dieldrin
NT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

NT

**Septic System Excavation**

4	<0.4	68	2	10	<0.1	3	4	0.31	<0.1
5 <td>&lt;0.4</td> <td>61</td> <td>4</td> <td>11</td> <td>&lt;0.1</td> <td>3</td> <td>16</td> <td>0.65</td> <td>&lt;0.1</td>	<0.4	61	4	11	<0.1	3	16	0.65	<0.1

**Validation Sampling - Vertical Mixing**

0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05

NT

Location	Aluminum + Dieldrin	Chlordane	DDT + DDE + DDD	DDD	DDE	Endosulfan	Endrin	Heptachlor TEQ <sup>H</sup>	HCB	Methoxychlor	Chloropyrifos	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Nitrate	Nitrite			
clayey sand	6	50	240	-	-	270	10	6	10	300	160	100	20	12%	6000	300	40	400	7400	130000	7800			
clayey sand	0.35	4	-	1.7	2.3	34	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
clayey sand																								
clayey sand																								

NT

NT

Assessment and Remediation Criteria

NC

epoxide concentration and the heptachlor concentration  
 are listed directly above  
 are listed directly above  
 reporting limit of 0.1g/kg

LOR





# CHAIN OF CUSTODY - Client

**ENVIROLAB GROUP - National phone number 1300 42 43 44**

Sydney Lab - Envirolab Services  
12 Ashley St, Chatswood, NSW 2067  
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories  
16-18 Hayden Crt Myaree, WA 6154  
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services  
1A Dalmore Drive Scoresby VIC 3179  
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services  
20a, 10-20 Depot St, Banyo, QLD 4014  
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services  
7a The Parade, Norwood, SA 5067  
Ph 0406 350 706 / adelaide@envirolab.com.au

Client Project Name / Number / Site etc (ie report title):  
78156.02 Humpty Doo

PO No.: 125897

Envirolab Quote No.: 2016-R00C5

Address: PO Box 36858 Winnellie NT 0820

Date results required:

Or choose: standard

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

Phone: 08 8948 6800 Mob:

Email: andrew.gane@douglaspartners.com.au  
darwin.admin@douglaspartners.com.au

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Tests Required						Comments		
					IWRG 621 Clean Fill Screen	OCP & OPP Low Level	Asbestos ID	3 Metals	OCP Low Level	Nitrogen Suite		Metals as per Clean Fill Screen	OCP & OPP Low Level - QA Rep
1	HSR/TP30/S1	-	14/9/16	S	1	1	1	1	1	1	1		
2	HSR/TP30/S2	-	14/9/16	S	1	1	1	1	1	1	1		
3	HSR/TP30/S3	-	14/9/16	S	1	1	1	1	1	1	1		
4	HSR/TP30/S4	-	14/9/16	S	1	1	1	1	1	1	1		
5	HSR/TP30/B	-	14/9/16	S	1	1	1	1	1	1	1		
6	HSR/TP30/SP1	-	14/9/16	S	1	1	1	1	1	1	1		
7	HSR/TP30/SP2	-	14/9/16	S	1	1	1	1	1	1	1		
8	HSR/TP27/S1	-	14/9/16	S	1	1	1	1	1	1	1		
9	HSR/TP27/S2	-	14/9/16	S	1	1	1	1	1	1	1		
10	HSR/TP27/S3	-	14/9/16	S	1	1	1	1	1	1	1		
11	HSR/TP27/S4	-	14/9/16	S	1	1	1	1	1	1	1		
12	HSR/TP27/B	-	14/9/16	S	1	1	1	1	1	1	1		
13	HSR/TP27/SP1	-	14/9/16	S	1	1	1	1	1	1	1		
14	HSR/TP27/SP2	-	14/9/16	S	1	1	1	1	1	1	1		

**ENVIROLAB GROUP**  
 Lab No. 186064  
 Date Rec - 20-9  
 Time Rec - 1:30  
 Rec By - MC  
 TAT Rec - SAME 1/2/3 STD  
 Temp - Cool Ambient  
 Cooling - Ice (Ice) / None  
 Security Seal Yes/No

Relinquished by (Company): Douglas Partners Pty Ltd  
 Received by (Company): ELS DARWIN  
 Print Name: Andrew Gane  
 Date & Time: 16 September 2016  
 Signature: *[Signature]*  
 Print Name: Sally Horsnell  
 Date & Time: 19/9/16 9:06am  
 Signature: *[Signature]*



# CHAIN OF CUSTODY - Client

**ENVIROLAB GROUP - National phone number 1300 42 43 44**

Sydney Lab - EnviroLab Services  
12 Ashley St, Chatswood, NSW 2067  
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16-18 Hayden Crt Myaree, WA 6154  
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - EnviroLab Services  
1A Dalmore Drive Scoresby VIC 3179  
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - EnviroLab Services  
20a, 10-20 Depot St, Banyo, QLD 4014  
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - EnviroLab Services  
7a The Parade, Norwood, SA 5067  
Ph 0406 350 706 / adelaide@envirolab.com.au

Client Project Name / Number / Site etc (ie report title):  
78156.02 Humpty Doo

PO No.: 125897

EnviroLab Quote No.: 2016-R00C5

Date results required:  
Or choose: standard  
*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*

Report format: esdat / equis /

Lab Comments:

Lab Comments:

### Tests Required

EnviroLab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	IWRG 621 Clean Fill Screen	OCP & OPP Low Level	Asbestos ID	3 Metals	OCP Low Level	Nitrogen Suite	Metals as per Clean Fill Screen	OCP & OPP Low Level - QA Rep	Comments
15	HSR/TP26/S1	-	14/9/16	S	1	1	1	1	1				Provide as much information about the sample as you can
16	HSR/TP26/S2	-	14/9/16	S									
17	HSR/TP26/S3	-	14/9/16	S									
18	HSR/TP26/S4	-	14/9/16	S									
19	HSR/TP26/B	-	14/9/16	S									
20	HSR/TP26/SP1	-	14/9/16	S	1	1	1						
21	HSR/TP26/SP2	-	14/9/16	S									
22	HSR/TP28/S1	-	15/9/16	S					1				
23	HSR/TP28/S2	-	15/9/16	S					1				
24	HSR/TP28/S3	-	15/9/16	S					1				
25	HSR/TP28/S4	-	15/9/16	S					1				
26	HSR/TP28/B	-	15/9/16	S					1				
27	HSR/TP28/SP1	-	15/9/16	S	1	1	1						
28	HSR/TP28/SP2	-	15/9/16	S									

Received by (Company): ELS DARWIN

Print Name: SALLY HORSNELL

Date & Time: 19/9/16 9:00am

Signature: Sally Horsnell

Relinquished by (Company): Douglas Partners Pty Ltd

Print Name: Andrew Gane

Date & Time: 16 September 2016

Signature: [Signature]

Lab use only:

Samples Received: Cool or Ambient (circle one)

Temperature Received at: (if applicable)

Transported by: Hand delivered / courier



# CHAIN OF CUSTODY - Client

**ENVIROLAB GROUP - National phone number 1300 42 43 44**

Sydney Lab - EnviroLab Services  
12 Ashley St, Chatswood, NSW 2067  
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories  
16-18 Hayden Crt Myaree, WA 6154  
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - EnviroLab Services  
1A Dalmore Drive Scoresby VIC 3179  
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - EnviroLab Services  
20a, 10-20 Depot St, Banyo, QLD 4014  
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - EnviroLab Services  
7a The Parade, Norwood, SA 5067  
Ph 0406 350 706 / adelaide@envirolab.com.au

**Client Project Name / Number / Site etc (ie report title):**  
78156.02 Humpty Doo

**PO No.:** 125897

**EnviroLab Quote No.:** 2016-ROOC5

**Date results required:**

**Or choose: standard**

*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*

**Report format: esdat / equis /**

**Lab Comments:**

**Client Project Name / Number / Site etc (ie report title):**  
78156.02 Humpty Doo

**PO No.:** 125897

**EnviroLab Quote No.:** 2016-ROOC5

**Date results required:**

**Or choose: standard**

*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*

**Report format: esdat / equis /**

**Lab Comments:**

### Tests Required

EnviroLab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	IWRG 621 Clean Fill Screen	OC & OPP Low Level	Asbestos ID	3 Metals	OC Low Level	Nitrogen Suite	Metals as per Clean Fill Screen	OC & OPP Low Level - QA Rep	Comments
29 ✓	SS/TP/S1	-	15/9/16	S				1	1	1			Provide as much information about the sample as you can
30 ✓	SS/TP/S2	-	15/9/16	S				1	1	1			
31 ✓	SS/TP/SP1	-	15/9/16	S	1	1							
32 ✓	SS/TP/SP2	-	15/9/16	S		1					1		
33 ✓	SS/TP/SP3	-	15/9/16	S		1					1		
34 ✓	ASB/TP28/S1	-	14/9/16	S			1						
35 ✓	ASB/TP28/S2	-	14/9/16	S			1						
36 ✓	ASB/TP28/S3	-	14/9/16	S			1						
37 ✓	ASB/TP28/S4	-	14/9/16	S			1						
38 ✓	ASB/TP28/S5	-	14/9/16	S			1						
39 ✓	ASB/TP28/S6	-	14/9/16	S			1						
40 ✓	ASB/TP28/S7	-	14/9/16	S			1						
41 ✓	ASB/TP28/S8	-	14/9/16	S			1						

**Relinquished by (Company):** Douglas Partners Pty Ltd  
**Print Name:** Andrew Gane  
**Date & Time:** 16 September 2016  
**Signature:** [Signature]

**Received by (Company):** ELS DARWIN  
**Print Name:** SALLY HERSHELL  
**Date & Time:** 19/9/16 9:00am  
**Signature:** [Signature]

**Lab use only:**  
**Samples Received: Cool or Ambient (circle one)**  
**Temperature Received at: (if applicable)**  
**Transported by: Hand delivered / courier**



# CHAIN OF CUSTODY - Client

**ENVIROLAB GROUP - National phone number 1300 42 43 44**

Sydney Lab - EnviroLab Services  
12 Ashley St, Chatswood, NSW 2067  
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories  
16-18 Hayden Crt Myaree, WA 6154  
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - EnviroLab Services  
1A Dalmore Drive Scoresby VIC 3179  
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - EnviroLab Services  
20a, 10-20 Depot St, Banyo, QLD 4014  
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - EnviroLab Services  
7a The Parade, Norwood, SA 5067  
Ph 0406 350 706 / adelaide@envirolab.com.au

Client Project Name / Number / Site etc (ie report title):  
78156.02 Humpty Doo

PO No.: 125897

EnviroLab Quote No.: 2016-R00C5

Date results required:

Or choose: standard

Note: Inform lab in advance if urgent turnaround is required -

surcharges apply

Report format: esdat / equis /

Lab Comments:

Lab Comments:

### Sample information

### Tests Required

EnviroLab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	IWRG 621 Clean Fill Screen	OCF & OPP Low Level	Asbestos ID	8 Metals	OCF Low Level	Nitrogen Suite	Metals as per Clean Fill Screen	OCF & OPP Low Level - QA Rep	Comments
42 ✓	ASB/TP28/B	-	14/9/16	S BAW	1	1	1						Provide as much information about the sample as you can
43 ✓	ASB/TP28/SP1	-	14/9/16	S	1	1	1						
44 ✓	ASB/TP28/SP2	-	14/9/16	S	1	1	1						
45 ✓	ASB/TP28/SP3	-	14/9/16	S	1	1	1						
46 ✓	140916Rep1	-	14/9/16	S								1	
47 ✓	140916Rep2	-	14/9/16	S								1	
48 ✓	140916Rep4	-	14/9/16	S					1				
49 ✓	140916Rep5	-	14/9/16	S					1				
50 ✓	140916Rep7	-	14/9/16	S								1	
51 ✓	150916Rep1	-	15/9/16	S					1				
52 ✓	150916Rep2	-	15/9/16	S					1				
		-		S									
		-		S									

Relinquished by (Company): Douglas Partners Pty Ltd

Print Name: Andrew Gane

Date & Time: 16 September 2016

Signature: *AG*

Received by (Company): ELS - DARWIN

Print Name: Sally Horsnell

Date & Time: 19/9/16 9:30am

Signature: *Sally Horsnell*

Lab use only:

Samples Received: Cool or Ambient (circle one)

Temperature Received at: (if applicable)

Transported by: Hand delivered / courier



# CHAIN OF CUSTODY - Client

## ENVIROLAB GROUP - National phone number 1300 42 43 44

Client Project Name / Number / Site etc (ie report title):  
 78156.02 Humpty Doo  
 PO No.: 128724  
 Envirolab Quote No.: 2016-R00C5  
 Date results required:  
 Or choose: 2 Day TAT- 25% Surcharge  
*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*  
 Report format: esdat / equis /  
 Lab Comments:

Sydney Lab - Envirolab Services  
 12 Ashley St, Chatswood, NSW 2067  
 Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories  
 16-18 Hayden Crt Myaree, WA 6154  
 Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services  
 1A Dalmore Drive Scoresby VIC 3179  
 Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services  
 20a, 10-20 Depot St, Banyo, QLD 4014  
 Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services  
 7a The Parade, Norwood, SA 5067  
 Ph 0406 350 706 / adelaide@envirolab.com.au

### Sample Information

Client Sample ID or information	Depth	Date sampled	Type of sample
1 VM/S33	-	28/10	S
2 VM/S34	-	28/10	S
3 VM/S35	-	28/10	S
4 VM/S36	-	28/10	S
5 VM/S37	-	28/10	S
6 VM/S38	-	28/10	S
7 VM/S39	-	28/10	S
8 VM/S40	-	28/10	S
9 281016Rep2	-	28/10	S

### Tests Required

IWRG 621 Clean Fill Screen	OCP & OPP Low Level	Asbestos ID	8 Metals	OCP Low Level	Nitrogen Suite	Metals as per Clean Fill Screen	OCP & OPP Low Level - QA Rep
1	1						
1	1						
1	1						
1	1						
1	1						
1	1						
1	1						
1	1						
1	1						

### Comments

Comments
Provide as much information about the sample as you can

Laboratory No: 187921  
 Date Rec: 1-11  
 Time Rec: 1030  
 Rec By: MC  
 FAT No: - SAME (2) 5/STD  
 Temp: Cool / Ambient  
 Pooling: Pool / No Pool  
 Security Code: 206710

Received by (Company): Douglas Partners Pty Ltd  
 Received by (Company): ELS  
 Print Name: SALLY HENNING  
 Date & Time: 31/10/16, 3:30 PM  
 Signature: *[Signature]*

Lab use only:  
 Samples Received: Cool or Ambient (circle one)  
 Temperature Received at: 13 (if applicable)  
 Transported by: Hand delivered / Courier



# CHAIN OF CUSTODY - Client

## ENVIROLAB GROUP - National phone number 1300 42 43 44

**Douglas Partners Pty Ltd**  
 Person: Andrew Gane  
 Igr: Andrew Gane  
 Andrew Gane  
 PO Box 36858 Winnellie NT 0820  
 08 8948 6800 Mob: 0411 205 400  
 andrew.gane@douglaspartners.com.au  
 darwin.admin@douglaspartners.com.au

Client Project Name / Number / Site etc (ie report title):  
 78156.02 Humpty Doo  
 PO No.: 128724  
 Envirolab Quote No.: 2016-R00C5  
 Date results required:  
 Or choose: 2 Day TAT- 25% Surcharge  
*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*  
 Report format: esdat / equis /  
 Lab Comments:

Sydney Lab - Envirolab Services  
 12 Ashley St, Chatswood, NSW 2067  
 Ph 02 9910 6200 / sydney@envirolab.com.au  
 Perth Lab - MPL Laboratories  
 16-18 Hayden Ct Myaree, WA 6154  
 Ph 08 9317 2505 / lab@mpl.com.au  
 Melbourne Lab - Envirolab Services  
 1A Dalmore Drive Scoresby VIC 3179  
 Ph 03 9763 2500 / melbourne@envirolab.com.au  
 Brisbane Office - Envirolab Services  
 209, 10-20 Depot St, Banyo, QLD 4014  
 Ph 07 3266 9532 / brisbane@envirolab.com.au  
 Adelaide Office - Envirolab Services  
 7a The Parade, Norwood, SA 5067  
 Ph 0406 350 706 / adelaide@envirolab.com.au

Sample information				Tests Required							Comments	
Lab ID	Client Sample ID or information	Depth	Date sampled	Type of sample	IWRG 621 Clean Fill Screen	OCP & OPP Low Level	Asbestos ID	8 Metals	OCP Low Level	Nitrogen Suite		Metals as per Clean Fill Screen
10	TSSP/S18	-	28/10	S	1							
11	TSSP/S19	-	28/10	S	1							
12	TSSP/S20	-	28/10	S	1							
13	TSSP/S21	-	28/10	S	1							
14	TSSP/S22	-	28/10	S	1							
15	TSSP/S23	-	28/10	S	1							
16	TSSP/S24	-	28/10	S	1							
17	TSSP/S25	-	28/10	S	1							
18	281016Rep1	-	28/10	S	1							

Received by (Company): ELS  
 Print Name: SALLY HORSNELL  
 Date & Time: 31/10/16 3:39 PM  
 Signature: Sally Horsnell

Lab use only:  
 Samples Received: Cool or Ambient (circle one)  
 Temperature Received at: (if applicable)  
 Transported by: Hand delivered / courier



16-18 Hayden Court, Myaree, Western Australia 6154  
PO Box 4023 Myaree BC, Western Australia 6950  
tel: +61 8 9317 2505

email: lab@mpl.com.au  
[envirolab.com.au](http://envirolab.com.au)

Envirolab Services (WA) Pty Ltd trading as  
MPL Laboratories | ABN 53 140 099 207

## CERTIFICATE OF ANALYSIS 186064

### **Client:**

**Douglas Partners NT**

PO Box 36858

Winnellie

NT 0821

**Attention:** Jessica Paulsen

### **Sample log in details:**

Your Reference:	<b><u>78156.02 Humpty Doo</u></b>
No. of samples:	52 Soil
Date samples received:	20/09/2016
Date completed instructions received:	20/09/2016
Location:	

### **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 pages of this report for any comments relating to the results.***

### **Report Details:**

Date results requested by: 28/09/16

Date of Preliminary Report: Not Issued

Issue Date: 28/09/16

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing

**Tests not covered by NATA are denoted with \*.**

### **Results Approved By:**

Lalanee Rupasinghe  
Approved Signatory

Joshua Lim  
Operations Manager

MPL Reference: 186064

Revision No: R 00



Low Level OCP in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	186064-1 HSR/TP30/S1 14/09/2016 Soil	186064-2 HSR/TP30/S2 14/09/2016 Soil	186064-3 HSR/TP30/S3 14/09/2016 Soil	186064-4 HSR/TP30/S4 14/09/2016 Soil	186064-5 HSR/TP30/B 14/09/2016 Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	100	102	93	97	90

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-7 HSR/TP30/SP 2	186064-8 HSR/TP27/S1	186064-9 HSR/TP27/S2	186064-10 HSR/TP27/S3
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	94	92	97	99	94

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-11 HSR/TP27/S4	186064-12 HSR/TP27/B	186064-13 HSR/TP27/SP 1	186064-14 HSR/TP27/SP 2	186064-15 HSR/TP26/S1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	0.06	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	0.02	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	0.03	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	98	85	86	102	100

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-16 HSR/TP26/S2	186064-17 HSR/TP26/S3	186064-18 HSR/TP26/S4	186064-19 HSR/TP26/B	186064-20 HSR/TP26/SP 1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	97	93	92	89	88

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-21 HSR/TP26/SP 2	186064-22 HSR/TP28/S1	186064-23 HSR/TP28/S2	186064-24 HSR/TP28/S3	186064-25 HSR/TP28/S4
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	95	101	92	90	98

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-26 HSR/TP28/B	186064-27 HSR/TP28/SP 1	186064-28 HSR/TP28/SP 2	186064-29 SS/TP/S1	186064-30 SS/TP/S2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D14	%	88	97	96	96	95

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-31 SS/TP/SP1	186064-32 SS/TP/SP2	186064-33 SS/TP/SP3	186064-43 ASB/TP28/SP 1	186064-44 ASB/TP28/SP 2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	0.04	0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
p-Terphenyl-D <sub>14</sub>	%	91	100	91	103	93

Low Level OCP in soil Our Reference: Your Reference	UNITS -----	186064-45 ASB/TP28/SP 3	186064-46 140916REP1	186064-47 140916REP2	186064-48 140916REP4	186064-49 140916REP5
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	0.02	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p</i> -Terphenyl-D <sub>14</sub>	%	100	99	99	84	95

Low Level OCP in soil				
Our Reference:	UNITS	186064-50	186064-51	186064-52
Your Reference	-----	140916REP7	150916REP1	150916REP2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01
Dieldrin	mg/kg	0.02	<0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01
p-Terphenyl-D <sub>14</sub>	%	95	99	93

Organophosphorus Pesticides	UNITS	186064-6	186064-7	186064-13	186064-14	186064-20
Our Reference:	-----	HSR/TP30/SP	HSR/TP30/SP	HSR/TP27/SP	HSR/TP27/SP	HSR/TP26/SP
Your Reference		1	2	1	2	1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	94	92	86	102	88

Organophosphorus Pesticides	UNITS	186064-21	186064-27	186064-28	186064-31	186064-32
Our Reference:	-----	HSR/TP26/SP	HSR/TP28/SP	HSR/TP28/SP	SS/TP/SP1	SS/TP/SP2
Your Reference		2	1	2		
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	95	97	96	91	100

Organophosphorus Pesticides	UNITS	186064-33	186064-43	186064-44	186064-45	186064-46
Our Reference:	-----	SS/TP/SP3	ASB/TP28/SP	ASB/TP28/SP	ASB/TP28/SP	140916REP1
Your Reference	-----		1	2	3	
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	91	103	93	100	99

Organophosphorus Pesticides	UNITS	186064-47	186064-50
Our Reference:	-----	140916REP2	140916REP7
Your Reference	-----		
Date Sampled	-----	14/09/2016	14/09/2016
Type of sample		Soil	Soil
Date extracted	-	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016
Dichlorovos	mg/kg	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05
p-Terphenyl-D14	%	99	95

Acid Extractable metals in soil	UNITS	186064-29	186064-30
Our Reference:	-----	SS/TP/S1	SS/TP/S2
Your Reference	-----	14/09/2016	14/09/2016
Date Sampled		Soil	Soil
Type of sample			
Date digested	-	22/09/2016	22/09/2016
Date analysed	-	27/09/2016	27/09/2016
Arsenic	mg/kg	4	5
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	68	61
Copper	mg/kg	2	4
Lead	mg/kg	10	11
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	3	3
Zinc	mg/kg	4	16

Miscellaneous Inorg - soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-29 SS/TP/S1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Chromium (VI)	mg/kg	<1	<1	<1	<1	[NA]
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Fluoride	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Total Kjeldahl Nitrogen	mg/kg	[NA]	[NA]	[NA]	[NA]	190
Nitrate-N	mg/kg	[NA]	[NA]	[NA]	[NA]	0.31
Nitrite-N	mg/kg	[NA]	[NA]	[NA]	[NA]	<0.10
Ammonia as N (1:5 KCl extract)	mg/kg	[NA]	[NA]	[NA]	[NA]	1.4
Organic N	mg/kg	[NA]	[NA]	[NA]	[NA]	180

Miscellaneous Inorg - soil Our Reference: Your Reference	UNITS -----	186064-30 SS/TP/S2	186064-31 SS/TP/SP1	186064-43 ASB/TP28/SP 1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	22/09/2016	22/09/2016	22/09/2016
Chromium (VI)	mg/kg	[NA]	<1	<1
Total Cyanide	mg/kg	[NA]	<0.5	<0.5
Fluoride	mg/kg	[NA]	<0.5	<0.5
Total Kjeldahl Nitrogen	mg/kg	180	[NA]	[NA]
Nitrate-N	mg/kg	0.65	[NA]	[NA]
Nitrite-N	mg/kg	<0.10	[NA]	[NA]
Ammonia as N (1:5 KCl extract)	mg/kg	1.6	[NA]	[NA]
Organic N	mg/kg	180	[NA]	[NA]

Client Reference: 78156.02 Humpty Doo

12 metals in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled Type of sample	-----	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil
Date digested	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
Arsenic	mg/kg	7	8	6	12	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.5	<0.4
Copper	mg/kg	2	2	2	1	5
Lead	mg/kg	16	17	12	25	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	mg/kg	<1	<1	<1	<1	<1
Nickel	mg/kg	2	1	2	<1	2
Tin	mg/kg	1	2	1	1	1
Selenium	mg/kg	2	2	<2	3	2
Silver	mg/kg	<1	<1	<1	<1	<1
Zinc	mg/kg	1	2	1	<1	56

12 metals in soil Our Reference: Your Reference	UNITS -----	186064-32 SS/TP/SP2	186064-33 SS/TP/SP3	186064-43 ASB/TP28/SP 1
Date Sampled Type of sample	-----	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil
Date digested	-	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	27/09/2016	27/09/2016	27/09/2016
Arsenic	mg/kg	4	8	11
Cadmium	mg/kg	<0.4	0.4	0.4
Copper	mg/kg	3	4	13
Lead	mg/kg	10	16	15
Mercury	mg/kg	<0.1	<0.1	<0.1
Molybdenum	mg/kg	<1	<1	<1
Nickel	mg/kg	3	3	4
Tin	mg/kg	<1	2	1
Selenium	mg/kg	<2	3	2
Silver	mg/kg	<1	<1	<1
Zinc	mg/kg	12	21	31

vTRH(C6-C10)/MBTEXN in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled Type of sample	-----	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil	14/09/2016 Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
TRHC <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
MTBE	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	%	103	98	105	108	104

vTRH(C6-C10)/MBTEXN in soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled Type of sample	-----	14/09/2016 Soil
Date extracted	-	22/09/2016
Date analysed	-	22/09/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	<25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	<25
TRHC <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	mg/kg	<25
MTBE	mg/kg	<0.5
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	99

svTRH(C10-C36) in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100	<100	<100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100	<100	<100	<100
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH>C <sub>10</sub> -C <sub>16</sub> less N (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	<100	<100	<100	<100	<100
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	95	96	99	97	97

svTRH(C10-C36) in soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	<50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	<100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	<100
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	<50
TRH>C <sub>10</sub> -C <sub>16</sub> less N (F2)	mg/kg	<50
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	<100
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	<100
Surrogate o-Terphenyl	%	99

VHC's in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Dichlorodifluoromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromochloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
2-chlorotoluene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0

VHC's in soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
1,2-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Hexachlorobutadiene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate Dibromofluorometha	%	95	94	96	95	96
Surrogate aaa-Trifluorotoluene	%	92	88	94	96	93
Surrogate Toluene-d8	%	106	96	103	102	102
Surrogate 4-Bromofluorobenz	%	101	96	103	105	102

VHC's in soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	22/09/2016
Dichlorodifluoromethane	mg/kg	<1.0
Chloromethane	mg/kg	<1.0
Vinyl Chloride	mg/kg	<1.0
Bromomethane	mg/kg	<1.0
Chloroethane	mg/kg	<1.0
Trichlorofluoromethane	mg/kg	<1.0
1,1-Dichloroethene	mg/kg	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0
1,1-dichloroethane	mg/kg	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0
Bromochloromethane	mg/kg	<1.0
Chloroform	mg/kg	<1.0
2,2-dichloropropane	mg/kg	<1.0
1,2-dichloroethane	mg/kg	<1.0
1,1,1-trichloroethane	mg/kg	<1.0
1,1-dichloropropene	mg/kg	<1.0
Carbon tetrachloride	mg/kg	<1.0
Dibromomethane	mg/kg	<1.0
1,2-dichloropropane	mg/kg	<1.0
Trichloroethene	mg/kg	<1.0
Bromodichloromethane	mg/kg	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0

VHC's in soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled Type of sample	-----	14/09/2016 Soil
1,1,2-trichloroethane	mg/kg	<1.0
1,3-dichloropropane	mg/kg	<1.0
Dibromochloromethane	mg/kg	<1.0
1,2-dibromoethane	mg/kg	<1.0
Tetrachloroethene	mg/kg	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0
Chlorobenzene	mg/kg	<1.0
Bromoform	mg/kg	<1.0
1,1,2,2-tetrachloroethane	mg/kg	<1.0
1,2,3-trichloropropane	mg/kg	<1.0
Bromobenzene	mg/kg	<1.0
2-chlorotoluene	mg/kg	<1.0
4-chlorotoluene	mg/kg	<1.0
1,3-dichlorobenzene	mg/kg	<1.0
1,4-dichlorobenzene	mg/kg	<1.0
1,2-dichlorobenzene	mg/kg	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0
Hexachlorobutadiene	mg/kg	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0
Surrogate Dibromofluorometha	%	95
Surrogate aaa-Trifluorotoluene	%	89
Surrogate Toluene-d8	%	104
Surrogate 4-Bromofluorobenz	%	97

SVCH's in Soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
1,3-Dichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-Trichlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3,4-Tetrachlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorocyclopentadiene	mg/kg	<2	<2	<2	<2	<2
Hexachlorobutadiene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
p-Terphenyl-D <sub>14</sub>	%	94	86	88	97	91

SVCH's in Soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	24/09/2016
1,3-Dichlorobenzene	mg/kg	<0.5
1,4-Dichlorobenzene	mg/kg	<0.5
1,2-Dichlorobenzene	mg/kg	<0.5
Hexachloroethane	mg/kg	<0.5
1,2,3-Trichlorobenzene	mg/kg	<0.5
1,2,4-Trichlorobenzene	mg/kg	<0.5
1,3,5-Trichlorobenzene	mg/kg	<0.5
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	<0.5
1,2,3,4-Tetrachlorobenzene	mg/kg	<0.5
Hexachlorocyclopentadiene	mg/kg	<2
Hexachlorobutadiene	mg/kg	<0.5
Pentachlorobenzene	mg/kg	<0.5
Hexachlorobenzene (HCB)	mg/kg	<0.5
p-Terphenyl-D <sub>14</sub>	%	103

PAHs in Soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
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,j+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 calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NO +VE PAHS	NO +VE PAHS	NO +VE PAHS	NO +VE PAHS	NO +VE PAHS
p-Terphenyl-D14	%	94	86	88	97	91

PAHs in Soil		
Our Reference:	UNITS	186064-43
Your Reference	-----	ASB/TP28/SP
		1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	24/09/2016
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Total Positive PAHs	mg/kg	NO +VE PAHS
p-Terphenyl-D14	%	103

Client Reference: 78156.02 Humpty Doo

PCBs in Soil Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-31 SS/TP/SP1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
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

PCBs in Soil Our Reference: Your Reference	UNITS -----	186064-43 ASB/TP28/SP 1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	24/09/2016
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1

Speciated Phenols in Soil Our Reference: Your Reference  Date Sampled Type of sample	UNITS -----  -----	186064-6 HSR/TP30/SP 1 14/09/2016 Soil	186064-13 HSR/TP27/SP 1 14/09/2016 Soil	186064-20 HSR/TP26/SP 1 14/09/2016 Soil	186064-27 HSR/TP28/SP 1 14/09/2016 Soil	186064-31 SS/TP/SP1  14/09/2016 Soil
Date extracted	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016
Phenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2-Chlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
4-Chloro-3-methylphenol	mg/kg	<5	<5	<5	<5	<5
2-Methylphenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
3/4-Methylphenol	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
2-Nitrophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dimethylphenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,6-Dichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-Trichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,6-Trichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dinitrophenol	mg/kg	<4	<4	<4	<4	<4
4-Nitrophenol	mg/kg	<4	<4	<4	<4	<4
2,3,4,6-Tetrachlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2-Methyl-4,6-dinitrophenol	mg/kg	<10	<10	<10	<10	<10
Pentachlorophenol	mg/kg	<5	<5	<5	<5	<5
Surrogate Phenol-d6	%	116	71	97	113	95

Speciated Phenols in Soil	UNITS	186064-43
Our Reference:	-----	ASB/TP28/SP
Your Reference		1
Date Sampled	-----	14/09/2016
Type of sample		Soil
Date extracted	-	22/09/2016
Date analysed	-	24/09/2016
Phenol	mg/kg	<0.2
2-Chlorophenol	mg/kg	<0.2
4-Chloro-3-methylphenol	mg/kg	<5
2-Methylphenol	mg/kg	<0.2
3/4-Methylphenol	mg/kg	<0.4
2-Nitrophenol	mg/kg	<0.2
2,4-Dimethylphenol	mg/kg	<0.2
2,4-Dichlorophenol	mg/kg	<0.2
2,6-Dichlorophenol	mg/kg	<0.2
2,4,5-Trichlorophenol	mg/kg	<0.2
2,4,6-Trichlorophenol	mg/kg	<0.2
2,4-Dinitrophenol	mg/kg	<4
4-Nitrophenol	mg/kg	<4
2,3,4,6-Tetrachlorophenol	mg/kg	<0.2
2-Methyl-4,6-dinitrophenol	mg/kg	<10
Pentachlorophenol	mg/kg	<5
Surrogate Phenol-d6	%	114

Moisture						
Our Reference:	UNITS	186064-1	186064-2	186064-3	186064-4	186064-5
Your Reference	-----	HSR/TP30/S1	HSR/TP30/S2	HSR/TP30/S3	HSR/TP30/S4	HSR/TP30/B
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	8.2	8.2	7.1	9.6	13

Moisture						
Our Reference:	UNITS	186064-6	186064-7	186064-8	186064-9	186064-10
Your Reference	-----	HSR/TP30/SP 1	HSR/TP30/SP 2	HSR/TP27/S1	HSR/TP27/S2	HSR/TP27/S3
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	9.7	12	10	7.4	7.0

Moisture						
Our Reference:	UNITS	186064-11	186064-12	186064-13	186064-14	186064-15
Your Reference	-----	HSR/TP27/S4	HSR/TP27/B	HSR/TP27/SP 1	HSR/TP27/SP 2	HSR/TP26/S1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	6.3	13	13	12	9.9

Moisture						
Our Reference:	UNITS	186064-16	186064-17	186064-18	186064-19	186064-20
Your Reference	-----	HSR/TP26/S2	HSR/TP26/S3	HSR/TP26/S4	HSR/TP26/B	HSR/TP26/SP 1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	6.6	5.1	8.2	10	7.6

Moisture						
Our Reference:	UNITS	186064-21	186064-22	186064-23	186064-24	186064-25
Your Reference	-----	HSR/TP26/SP 2	HSR/TP28/S1	HSR/TP28/S2	HSR/TP28/S3	HSR/TP28/S4
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	7.0	6.1	5.8	6.5	6.7

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Moisture						
Our Reference:	UNITS	186064-26	186064-27	186064-28	186064-29	186064-30
Your Reference	-----	HSR/TP28/B	HSR/TP28/SP 1	HSR/TP28/SP 2	SS/TP/S1	SS/TP/S2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	11	11	8.2	3.5	4.3

Moisture						
Our Reference:	UNITS	186064-31	186064-32	186064-33	186064-43	186064-44
Your Reference	-----	SS/TP/SP1	SS/TP/SP2	SS/TP/SP3	ASB/TP28/SP 1	ASB/TP28/SP 2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	4.9	5.9	5.6	6.6	6.9

Moisture						
Our Reference:	UNITS	186064-45	186064-46	186064-47	186064-48	186064-49
Your Reference	-----	ASB/TP28/SP 3	140916REP1	140916REP2	140916REP4	140916REP5
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Moisture	%	6.6	10	9.2	14	6.5

Moisture				
Our Reference:	UNITS	186064-50	186064-51	186064-52
Your Reference	-----	140916REP7	150916REP1	150916REP2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil
Date prepared	-	22/09/2016	22/09/2016	22/09/2016
Date analysed	-	23/09/2016	23/09/2016	23/09/2016
Moisture	%	6.7	5.8	5.5

Asbestos ID - soils Our Reference: Your Reference	UNITS -----	186064-6 HSR/TP30/SP 1	186064-13 HSR/TP27/SP 1	186064-20 HSR/TP26/SP 1	186064-27 HSR/TP28/SP 1	186064-34 ASB/TP28/S1
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Sample Weight	g	100	100	100	100	980
Sample Description	-	Soil	Soil	Soil	Soil	Soil
Asbestos ID in soil (AS4964) >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	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils Our Reference: Your Reference	UNITS -----	186064-35 ASB/TP28/S2	186064-36 ASB/TP28/S3	186064-37 ASB/TP28/S4	186064-38 ASB/TP28/S5	186064-39 ASB/TP28/S6
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Sample Weight	g	1240	890	690	920	790
Sample Description	-	Soil	Soil	Soil	Soil	Soil
Asbestos ID in soil (AS4964) >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	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils Our Reference: Your Reference	UNITS -----	186064-40 ASB/TP28/S7	186064-41 ASB/TP28/S8	186064-42 ASB/TP28/B	186064-43 ASB/TP28/SP 1	186064-44 ASB/TP28/SP 2
Date Sampled	-----	14/09/2016	14/09/2016	14/09/2016	14/09/2016	14/09/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Sample Weight	g	750	880	570	100	100
Sample Description	-	Soil	Soil	Soil	Soil	Soil
Asbestos ID in soil (AS4964) >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	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils Our Reference: Your Reference	UNITS -----	186064-45 ASB/TP28/SP 3
Date Sampled Type of sample	-----	14/09/2016 Soil
Date analysed	-	23/09/2016
Sample Weight	g	100
Sample Description	-	Soil
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected

Method ID	Methodology Summary
<b>ORG-012</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
<b>ORG-005/012</b>	Organochlorine Pesticides in soil by DCM:Acetone extraction and water by DCM extraction with determination by GC-ECD/GC-MS.
<b>ORG-015</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS or GC-MS/MS.
<b>ORG-008/015</b>	Organophosphorus Pesticides in soil by DCM:Acetone extraction and water by DCM extraction with determination by GC-ECD/GC-MS.
<b>METALS-020</b>	Metals in soil and water by ICP-OES.
<b>Metals-021</b>	Determination of Mercury by Cold Vapour AAS.
<b>INORG-118</b>	Hexavalent Chromium by Ion Chromatographic separation and colourimetric determination.
<b>INORG-014</b>	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
<b>INORG-026</b>	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Soils reported from a 1:5 water extract unless otherwise specified.
<b>INORG-062</b>	TKN - determined colourimetrically based on APHA latest edition Norg C.
<b>INORG-055</b>	Nitrate - determined colourimetrically. Soils are analysed from a water extract.
<b>INORG-055</b>	Nitrite - determined colourimetrically. Soils are analysed from a water extract.
<b>INORG-057</b>	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
<b>INORG series</b>	Determination of constituents in waters using colourimetric chemistry
<b>ORG-016</b>	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 Guideline on Investigation Levels for Soil and Groundwater.
<b>ORG-003</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
<b>ORG-014</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
<b>ORG-013/014</b>	VOC's in soil by methanolic extraction and water directly by purge and trap GCMS
<b>ORG-012</b>	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.
<b>ORG-012</b>	For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL.

Method ID	Methodology Summary
	<p>3. 'TEQ half PQL' values are assuming all contributing PAHs reported as &lt;PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above.</p> <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore " Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>
<b>ORG-004</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
<b>ORG-006</b>	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
<b>INORG-008</b>	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
<b>ASB-001</b>	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques, including Synthetic Mineral Fibres and Organic Fibres as per Australian Standard 4964-2004.

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Low Level OCP in soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	186064-1	22/09/2016    22/09/2016	LCS-1	22/09/2016
Date analysed	-			24/09/2016	186064-1	24/09/2016    24/09/2016	LCS-1	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	89%
b-BHC	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	92%
Lindane (g-BHC)	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	101%
Aldrin	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	96%
Heptachlor Epoxide	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	99%
g-Chlordane	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
a-Chlordane	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	98%
Dieldrin	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	99%
Endrin	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	112%
b-Endosulphan	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	LCS-1	101%
Methoxychlor	mg/kg	0.01	ORG-012	<0.01	186064-1	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D14	%		ORG-005/012	85	186064-1	100    88    RPD: 13	LCS-1	113%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			24/09/2016	[NT]	[NT]	LCS-1	24/09/2016
Dichlorovos	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	LCS-1	93%
Ronnel	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Fenitrothion	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	LCS-1	89%
Malathion	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	LCS-1	100%
Parathion-ethyl	mg/kg	0.05	ORG-008/015	<0.05	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	LCS-1	101%
Bromophos ethyl	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	0.05	ORG-015	<0.05	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%		ORG-008/015	85	[NT]	[NT]	LCS-1	113%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			21/09/2016	[NT]	[NT]	LCS-1	21/09/2016
Date analysed	-			27/09/2016	[NT]	[NT]	LCS-1	27/09/2016
Arsenic	mg/kg	2	METALS-020	<2	[NT]	[NT]	LCS-1	95%
Cadmium	mg/kg	0.4	METALS-020	<0.4	[NT]	[NT]	LCS-1	97%
Chromium	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	98%
Copper	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	102%
Lead	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	100%
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	LCS-1	111%
Nickel	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	104%
Zinc	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	96%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorg - soil						Base II Duplicate II %RPD		
Date prepared	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Chromium (VI)	mg/kg	1	INORG-118	<1	[NT]	[NT]	LCS-1	102%
Total Cyanide	mg/kg	0.5	INORG-014	[NT]	[NT]	[NT]	[NR]	[NR]
Fluoride	mg/kg	0.5	INORG-026	<0.5	[NT]	[NT]	[NR]	[NR]
Total Kjeldahl Nitrogen	mg/kg	10	INORG-062	<10	[NT]	[NT]	[NR]	[NR]
Nitrate-N	mg/kg	0.1	INORG-055	<0.10	[NT]	[NT]	[NR]	[NR]
Nitrite-N	mg/kg	0.1	INORG-055	<0.10	[NT]	[NT]	[NR]	[NR]
Ammonia as N (1:5 KCl extract)	mg/kg	0.5	INORG-057	<0.50	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
12 metals in soil						Base II Duplicate II %RPD		
Date digested	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			27/09/2016	[NT]	[NT]	LCS-1	27/09/2016
Arsenic	mg/kg	2	METALS-020	<2	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	0.4	METALS-020	<0.4	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	1	METALS-020	<1	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	1	METALS-020	<1	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NR]	[NR]
Molybdenum	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	112%
Nickel	mg/kg	1	METALS-020	<1	[NT]	[NT]	[NR]	[NR]
Tin	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	103%
Selenium	mg/kg	2	METALS-020	<2	[NT]	[NT]	LCS-1	89%
Silver	mg/kg	1	METALS-020	<1	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	1	METALS-020	<1	[NT]	[NT]	[NR]	[NR]

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/MBTEXN in soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	89%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	89%
MTBE	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	LCS-1	94%
Toluene	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	LCS-1	95%
Ethylbenzene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	86%
m+p-xylene	mg/kg	2	ORG-016	<2	[NT]	[NT]	LCS-1	84%
o-xylene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	85%
Naphthalene	mg/kg	1	ORG-016	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		ORG-016	101	[NT]	[NT]	LCS-1	99%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C36) in soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			23/09/2016	[NT]	[NT]	LCS-1	23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	115%
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	115%
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	106%
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	113%
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	116%
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	100%
Surrogate o-Terphenyl	%		ORG-003	96	[NT]	[NT]	LCS-1	84%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VHC's in soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Dichlorodifluoromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VHC's in soil						Base II Duplicate II %RPD		
1,1-dichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	87%
cis-1,2-dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroform	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
2,2-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	75%
1,1,1-trichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	82%
1,1-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromomethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Trichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	93%
Bromodichloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
trans-1,3-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	88%
1,2-dibromoethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	93%
1,1,1,2-tetrachloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromoform	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	86%
1,1,2,2-tetrachloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	87%
1,2-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluorometha	%		ORG-013/014	94	[NT]	[NT]	LCS-1	95%
Surrogate aaa-Trifluorotoluene	%		ORG-014	90	[NT]	[NT]	LCS-1	88%
Surrogate Toluene-d8	%		ORG-013/014	103	[NT]	[NT]	LCS-1	103%
Surrogate 4-Bromofluorobenz	%		ORG-013/014	99	[NT]	[NT]	LCS-1	97%

Client Reference: 78156.02 Humpty Doo

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
SVCH's in Soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			24/09/2016	[NT]	[NT]	LCS-1	24/09/2016
1,3-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,4-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	LCS-1	94%
1,2-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachloroethane	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,4-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	LCS-1	91%
1,3,5-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3,5 & 1,2,4,5-Tetrachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3,4-Tetrachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachlorocyclopentadiene	mg/kg	2	ORG-012	<2	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Pentachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachlorobenzene (HCB)	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%		ORG-012	85	[NT]	[NT]	LCS-1	113%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			24/09/2016	[NT]	[NT]	LCS-1	24/09/2016
Naphthalene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	91%
Acenaphthylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	92%
Phenanthrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	98%
Anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	106%
Pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	114%
Benzo(a)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	99%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	ORG-012	<0.05	[NT]	[NT]	LCS-1	95%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%		ORG-012	85	[NT]	[NT]	LCS-1	113%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			24/09/2016	[NT]	[NT]	LCS-1	24/09/2016
Arochlor 1016	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	LCS-1	100%
Arochlor 1260	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Speciated Phenols in Soil						Base II Duplicate II %RPD		
Date extracted	-			22/09/2016	[NT]	[NT]	LCS-1	22/09/2016
Date analysed	-			24/09/2016	[NT]	[NT]	LCS-1	24/09/2016
Phenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	82%
2-Chlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	83%
4-Chloro-3-methylphenol	mg/kg	5	ORG-012	<5	[NT]	[NT]	[NR]	[NR]
2-Methylphenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	74%
3/4-Methylphenol	mg/kg	0.4	ORG-012	<0.4	[NT]	[NT]	[NR]	[NR]
2-Nitrophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dimethylphenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,6-Dichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	70%
2,4,5-Trichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4,6-Trichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dinitrophenol	mg/kg	4	ORG-012	<4	[NT]	[NT]	[NR]	[NR]
4-Nitrophenol	mg/kg	4	ORG-012	<4	[NT]	[NT]	[NR]	[NR]
2,3,4,6-Tetrachlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2-Methyl-4,6-dinitrophenol	mg/kg	10	ORG-012	<10	[NT]	[NT]	[NR]	[NR]
Pentachlorophenol	mg/kg	5	ORG-012	<5	[NT]	[NT]	[NR]	[NR]
Surrogate Phenol-d6	%		ORG-012	116	[NT]	[NT]	LCS-1	102%

QUALITYCONTROL	UNITS	PQL	METHOD	Blank
Moisture				
Date prepared	-			22/09/2016
Date analysed	-			23/09/2016
Moisture	%	0.1	INORG-008	<0.10

QUALITYCONTROL	UNITS	PQL	METHOD	Blank
Asbestos ID - soils				
Date analysed	-			[NT]

QUALITYCONTROL	UNITS	Dup. Sm#	Duplicate	Spike Sm#	Spike % Recovery
Low Level OCP in soil			Base + Duplicate + %RPD		
Date extracted	-	186064-20	22/09/2016    22/09/2016	LCS-2	22/09/2016
Date analysed	-	186064-20	24/09/2016    24/09/2016	LCS-2	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	186064-20	<0.01    <0.01	LCS-2	92%
b-BHC	mg/kg	186064-20	<0.01    <0.01	LCS-2	102%
Lindane (g-BHC)	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	186064-20	<0.01    <0.01	LCS-2	85%
Aldrin	mg/kg	186064-20	<0.01    <0.01	LCS-2	98%
Heptachlor Epoxide	mg/kg	186064-20	<0.01    <0.01	LCS-2	98%
g-Chlordane	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
a-Chlordane	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	186064-20	<0.01    <0.01	LCS-2	105%
Dieldrin	mg/kg	186064-20	<0.01    <0.01	LCS-2	100%
Endrin	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	186064-20	<0.01    <0.01	LCS-2	120%
b-Endosulphan	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	186064-20	<0.01    <0.01	LCS-2	99%
Methoxychlor	mg/kg	186064-20	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D14	%	186064-20	88    88    RPD: 0	LCS-2	119%

QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date extracted	-	186064-20	22/09/2016    22/09/2016		
Date analysed	-	186064-20	24/09/2016    24/09/2016		
Dichlorovos	mg/kg	186064-20	<0.05    <0.05		
Diazinon	mg/kg	186064-20	<0.05    <0.05		
Chlorpyrifos methyl	mg/kg	186064-20	<0.05    <0.05		
Ronnel	mg/kg	186064-20	<0.05    <0.05		
Fenitrothion	mg/kg	186064-20	<0.05    <0.05		
Malathion	mg/kg	186064-20	<0.05    <0.05		
Chlorpyrifos	mg/kg	186064-20	<0.05    <0.05		
Parathion-ethyl	mg/kg	186064-20	<0.05    <0.05		
Ethion	mg/kg	186064-20	<0.05    <0.05		
Bromophos ethyl	mg/kg	186064-20	<0.05    <0.05		
Dimethoate	mg/kg	186064-20	<0.05    <0.05		
Azinphos methyl (Guthion)	mg/kg	186064-20	<0.05    <0.05		
p-Terphenyl-D14	%	186064-20	88    88    RPD: 0		
QUALITYCONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	[NR]	[NR]
Date analysed	-	[NT]	[NT]	[NR]	[NR]
Arsenic	mg/kg	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	[NT]	[NT]	[NR]	[NR]
Chromium	mg/kg	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	[NT]	[NT]	[NR]	[NR]
Nickel	mg/kg	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	[NT]	[NT]	[NR]	[NR]

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QUALITYCONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	LCS-2	22/09/2016
Date analysed	-	[NT]	[NT]	LCS-2	22/09/2016
Chromium (VI)	mg/kg	[NT]	[NT]	[NR]	[NR]
Total Cyanide	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoride	mg/kg	[NT]	[NT]	[NR]	[NR]
Total Kjeldahl Nitrogen	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrate-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrite-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Ammonia as N (1:5 KCl extract)	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL 12 metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	186064-20	22/09/2016    22/09/2016	LCS-2	22/09/2016
Date analysed	-	186064-20	27/09/2016    27/09/2016	LCS-2	27/09/2016
QUALITYCONTROL vTRH(C6-C10)/MBTEXN in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date extracted	-	186064-20	22/09/2016    22/09/2016		
Date analysed	-	186064-20	22/09/2016    22/09/2016		
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	186064-20	<25    <25		
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	186064-20	<25    <25		
MTBE	mg/kg	186064-20	<0.5    <0.5		
Benzene	mg/kg	186064-20	<0.2    <0.2		
Toluene	mg/kg	186064-20	<0.5    <0.5		
Ethylbenzene	mg/kg	186064-20	<1    <1		
m+p-xylene	mg/kg	186064-20	<2    <2		
o-xylene	mg/kg	186064-20	<1    <1		
Naphthalene	mg/kg	186064-20	<1    <1		
Surrogate aaa- Trifluorotoluene	%	186064-20	105    105    RPD: 0		

QUALITYCONTROL svTRH(C10-C36) in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	23/09/2016    23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	186064-20	<50    <50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	186064-20	<100    <100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	186064-20	<100    <100
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	186064-20	<50    <50
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	186064-20	<100    <100
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	186064-20	<100    <100
Surrogate o-Terphenyl	%	186064-20	99    100    RPD: 1
QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	22/09/2016    22/09/2016
Dichlorodifluoromethane	mg/kg	186064-20	<1.0    <1.0
Chloromethane	mg/kg	186064-20	<1.0    <1.0
Vinyl Chloride	mg/kg	186064-20	<1.0    <1.0
Bromomethane	mg/kg	186064-20	<1.0    <1.0
Chloroethane	mg/kg	186064-20	<1.0    <1.0
Trichlorofluoromethane	mg/kg	186064-20	<1.0    <1.0
1,1-Dichloroethene	mg/kg	186064-20	<1.0    <1.0
trans-1,2-dichloroethene	mg/kg	186064-20	<1.0    <1.0
1,1-dichloroethane	mg/kg	186064-20	<1.0    <1.0
cis-1,2-dichloroethene	mg/kg	186064-20	<1.0    <1.0
Bromochloromethane	mg/kg	186064-20	<1.0    <1.0
Chloroform	mg/kg	186064-20	<1.0    <1.0
2,2-dichloropropane	mg/kg	186064-20	<1.0    <1.0
1,2-dichloroethane	mg/kg	186064-20	<1.0    <1.0
1,1,1-trichloroethane	mg/kg	186064-20	<1.0    <1.0
1,1-dichloropropene	mg/kg	186064-20	<1.0    <1.0
Carbon tetrachloride	mg/kg	186064-20	<1.0    <1.0
Dibromomethane	mg/kg	186064-20	<1.0    <1.0
1,2-dichloropropane	mg/kg	186064-20	<1.0    <1.0
Trichloroethene	mg/kg	186064-20	<1.0    <1.0
Bromodichloromethane	mg/kg	186064-20	<1.0    <1.0
trans-1,3-dichloropropene	mg/kg	186064-20	<1.0    <1.0
cis-1,3-dichloropropene	mg/kg	186064-20	<1.0    <1.0
1,1,2-trichloroethane	mg/kg	186064-20	<1.0    <1.0
1,3-dichloropropane	mg/kg	186064-20	<1.0    <1.0
Dibromochloromethane	mg/kg	186064-20	<1.0    <1.0
1,2-dibromoethane	mg/kg	186064-20	<1.0    <1.0

QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Tetrachloroethene	mg/kg	186064-20	<1.0    <1.0
1,1,1,2-tetrachloroethane	mg/kg	186064-20	<1.0    <1.0
Chlorobenzene	mg/kg	186064-20	<1.0    <1.0
Bromoform	mg/kg	186064-20	<1.0    <1.0
1,1,2,2-tetrachloroethane	mg/kg	186064-20	<1.0    <1.0
1,2,3-trichloropropane	mg/kg	186064-20	<1.0    <1.0
Bromobenzene	mg/kg	186064-20	<1.0    <1.0
2-chlorotoluene	mg/kg	186064-20	<1.0    <1.0
4-chlorotoluene	mg/kg	186064-20	<1.0    <1.0
1,3-dichlorobenzene	mg/kg	186064-20	<1.0    <1.0
1,4-dichlorobenzene	mg/kg	186064-20	<1.0    <1.0
1,2-dichlorobenzene	mg/kg	186064-20	<1.0    <1.0
1,2-dibromo-3-chloropropane	mg/kg	186064-20	<1.0    <1.0
1,2,4-trichlorobenzene	mg/kg	186064-20	<1.0    <1.0
Hexachlorobutadiene	mg/kg	186064-20	<1.0    <1.0
1,2,3-trichlorobenzene	mg/kg	186064-20	<1.0    <1.0
Surrogate Dibromofluorometha	%	186064-20	96    97    RPD: 1
Surrogate aaa- Trifluorotoluene	%	186064-20	94    94    RPD: 0
Surrogate Toluene-d8	%	186064-20	103    107    RPD: 4
Surrogate 4- Bromofluorobenz	%	186064-20	103    103    RPD: 0
QUALITYCONTROL SVCH's in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	24/09/2016    24/09/2016
1,3-Dichlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,4-Dichlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,2-Dichlorobenzene	mg/kg	186064-20	<0.5    <0.5
Hexachloroethane	mg/kg	186064-20	<0.5    <0.5
1,2,3-Trichlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,2,4-Trichlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,3,5-Trichlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	186064-20	<0.5    <0.5
1,2,3,4-Tetrachlorobenzene	mg/kg	186064-20	<0.5    <0.5
Hexachlorocyclopentadiene	mg/kg	186064-20	<2    <2
Hexachlorobutadiene	mg/kg	186064-20	<0.5    <0.5
Pentachlorobenzene	mg/kg	186064-20	<0.5    <0.5
Hexachlorobenzene (HCB)	mg/kg	186064-20	<0.5    <0.5

QUALITYCONTROL SVCH's in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
p-Terphenyl-D14	%	186064-20	88    88    RPD: 0
QUALITYCONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	24/09/2016    24/09/2016
Naphthalene	mg/kg	186064-20	<0.1    <0.1
Acenaphthylene	mg/kg	186064-20	<0.1    <0.1
Acenaphthene	mg/kg	186064-20	<0.1    <0.1
Fluorene	mg/kg	186064-20	<0.1    <0.1
Phenanthrene	mg/kg	186064-20	<0.1    <0.1
Anthracene	mg/kg	186064-20	<0.1    <0.1
Fluoranthene	mg/kg	186064-20	<0.1    <0.1
Pyrene	mg/kg	186064-20	<0.1    <0.1
Benzo(a)anthracene	mg/kg	186064-20	<0.1    <0.1
Chrysene	mg/kg	186064-20	<0.1    <0.1
Benzo(b,j+k)fluoranthene	mg/kg	186064-20	<0.2    <0.2
Benzo(a)pyrene	mg/kg	186064-20	<0.05    <0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	186064-20	<0.1    <0.1
Dibenzo(a,h)anthracene	mg/kg	186064-20	<0.1    <0.1
Benzo(g,h,i)perylene	mg/kg	186064-20	<0.1    <0.1
p-Terphenyl-D14	%	186064-20	88    88    RPD: 0

QUALITYCONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	24/09/2016    24/09/2016
Arochlor 1016	mg/kg	186064-20	<0.1    <0.1
Arochlor 1221	mg/kg	186064-20	<0.1    <0.1
Arochlor 1232	mg/kg	186064-20	<0.1    <0.1
Arochlor 1242	mg/kg	186064-20	<0.1    <0.1
Arochlor 1248	mg/kg	186064-20	<0.1    <0.1
Arochlor 1254	mg/kg	186064-20	<0.1    <0.1
Arochlor 1260	mg/kg	186064-20	<0.1    <0.1
QUALITYCONTROL Speciated Phenols in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-20	22/09/2016    22/09/2016
Date analysed	-	186064-20	24/09/2016    24/09/2016
Phenol	mg/kg	186064-20	<0.2    <0.2
2-Chlorophenol	mg/kg	186064-20	<0.2    <0.2
4-Chloro-3-methylphenol	mg/kg	186064-20	<5    <5
2-Methylphenol	mg/kg	186064-20	<0.2    <0.2
3/4-Methylphenol	mg/kg	186064-20	<0.4    <0.4
2-Nitrophenol	mg/kg	186064-20	<0.2    <0.2
2,4-Dimethylphenol	mg/kg	186064-20	<0.2    <0.2
2,4-Dichlorophenol	mg/kg	186064-20	<0.2    <0.2
2,6-Dichlorophenol	mg/kg	186064-20	<0.2    <0.2
2,4,5-Trichlorophenol	mg/kg	186064-20	<0.2    <0.2
2,4,6-Trichlorophenol	mg/kg	186064-20	<0.2    <0.2
2,4-Dinitrophenol	mg/kg	186064-20	<4    <4
4-Nitrophenol	mg/kg	186064-20	<4    <4
2,3,4,6-Tetrachlorophenol	mg/kg	186064-20	<0.2    <0.2
2-Methyl-4,6-dinitrophenol	mg/kg	186064-20	<10    <10
Pentachlorophenol	mg/kg	186064-20	<5    <5
Surrogate Phenol-d6	%	186064-20	97    108    RPD: 11

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Asbestos ID - soils	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date analysed	-	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	186064-32	22/09/2016    22/09/2016	LCS-3	22/09/2016
Date analysed	-	186064-32	24/09/2016    24/09/2016	LCS-3	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	186064-32	<0.01    <0.01	LCS-3	100%
b-BHC	mg/kg	186064-32	<0.01    <0.01	LCS-3	111%
Lindane (g-BHC)	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	186064-32	<0.01    <0.01	LCS-3	96%
Aldrin	mg/kg	186064-32	<0.01    <0.01	LCS-3	100%
Heptachlor Epoxide	mg/kg	186064-32	<0.01    <0.01	LCS-3	103%
g-Chlordane	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
a-Chlordane	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
<i>p,p'</i> -DDE	mg/kg	186064-32	<0.01    <0.01	LCS-3	107%
Dieldrin	mg/kg	186064-32	<0.01    <0.01	LCS-3	106%
Endrin	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
<i>p,p'</i> -DDD	mg/kg	186064-32	<0.01    <0.01	LCS-3	120%
b-Endosulphan	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
<i>p,p'</i> -DDT	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	186064-32	<0.01    <0.01	LCS-3	125%
Methoxychlor	mg/kg	186064-32	<0.01    <0.01	[NR]	[NR]
<i>p</i> -Terphenyl-D <sub>14</sub>	%	186064-32	100    90    RPD: 11	LCS-3	126%

QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date extracted	-	186064-32	22/09/2016    22/09/2016		
Date analysed	-	186064-32	24/09/2016    24/09/2016		
Dichlorovos	mg/kg	186064-32	<0.05    <0.05		
Diazinon	mg/kg	186064-32	<0.05    <0.05		
Chlorpyrifos methyl	mg/kg	186064-32	<0.05    <0.05		
Ronnel	mg/kg	186064-32	<0.05    <0.05		
Fenitrothion	mg/kg	186064-32	<0.05    <0.05		
Malathion	mg/kg	186064-32	<0.05    <0.05		
Chlorpyrifos	mg/kg	186064-32	<0.05    <0.05		
Parathion-ethyl	mg/kg	186064-32	<0.05    <0.05		
Ethion	mg/kg	186064-32	<0.05    <0.05		
Bromophos ethyl	mg/kg	186064-32	<0.05    <0.05		
Dimethoate	mg/kg	186064-32	<0.05    <0.05		
Azinphos methyl (Guthion)	mg/kg	186064-32	<0.05    <0.05		
p-Terphenyl-D14	%	186064-32	100    90    RPD: 11		
QUALITYCONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	[NR]	[NR]
Date analysed	-	[NT]	[NT]	[NR]	[NR]
Arsenic	mg/kg	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	[NT]	[NT]	[NR]	[NR]
Chromium	mg/kg	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	[NT]	[NT]	[NR]	[NR]
Nickel	mg/kg	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	[NT]	[NT]	[NR]	[NR]

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	LCS-3	22/09/2016
Date analysed	-	[NT]	[NT]	LCS-3	22/09/2016
Chromium (VI)	mg/kg	[NT]	[NT]	[NR]	[NR]
Total Cyanide	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoride	mg/kg	[NT]	[NT]	[NR]	[NR]
Total Kjeldahl Nitrogen	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrate-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrite-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Ammonia as N (1:5 KCl extract)	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL 12 metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	LCS-3	22/09/2016
Date analysed	-	[NT]	[NT]	LCS-3	27/09/2016
Arsenic	mg/kg	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	[NT]	[NT]	[NR]	[NR]
Molybdenum	mg/kg	[NT]	[NT]	[NR]	[NR]
Nickel	mg/kg	[NT]	[NT]	[NR]	[NR]
Tin	mg/kg	[NT]	[NT]	[NR]	[NR]
Selenium	mg/kg	[NT]	[NT]	[NR]	[NR]
Silver	mg/kg	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Asbestos ID - soils	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date analysed	-	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	186064-50	22/09/2016    22/09/2016	186064-13	22/09/2016
Date analysed	-	186064-50	24/09/2016    24/09/2016	186064-13	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	186064-50	<0.01    <0.01	186064-13	95%
b-BHC	mg/kg	186064-50	<0.01    <0.01	186064-13	114%
Lindane (g-BHC)	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	186064-50	<0.01    <0.01	186064-13	88%
Aldrin	mg/kg	186064-50	<0.01    <0.01	186064-13	98%
Heptachlor Epoxide	mg/kg	186064-50	<0.01    <0.01	186064-13	102%
g-Chlordane	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]

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QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
a-Chlordane	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	186064-50	<0.01    <0.01	186064-13	106%
Dieldrin	mg/kg	186064-50	0.02    0.01    RPD: 67	186064-13	107%
Endrin	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	186064-50	<0.01    <0.01	186064-13	128%
b-Endosulphan	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	186064-50	<0.01    <0.01	186064-13	105%
Methoxychlor	mg/kg	186064-50	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D14	%	186064-50	95    95    RPD: 0	186064-13	128%
QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	186064-50	22/09/2016    22/09/2016	186064-13	22/09/2016
Date analysed	-	186064-50	24/09/2016    24/09/2016	186064-13	24/09/2016
Dichlorovos	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Diazinon	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	186064-50	<0.05    <0.05	186064-13	94%
Ronnel	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Fenitrothion	mg/kg	186064-50	<0.05    <0.05	186064-13	92%
Malathion	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos	mg/kg	186064-50	<0.05    <0.05	186064-13	104%
Parathion-ethyl	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Ethion	mg/kg	186064-50	<0.05    <0.05	186064-13	111%
Bromophosethyl	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Dimethoate	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	186064-50	<0.05    <0.05	[NR]	[NR]
p-Terphenyl-D14	%	186064-50	95    95    RPD: 0	186064-13	128%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	[NR]	[NR]
Date analysed	-	[NT]	[NT]	[NR]	[NR]
Arsenic	mg/kg	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	[NT]	[NT]	[NR]	[NR]
Chromium	mg/kg	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	[NT]	[NT]	[NR]	[NR]
Nickel	mg/kg	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	22/09/2016
Chromium (VI)	mg/kg	[NT]	[NT]	186064-13	99%
Total Cyanide	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoride	mg/kg	[NT]	[NT]	[NR]	[NR]
Total Kjeldahl Nitrogen	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrate-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Nitrite-N	mg/kg	[NT]	[NT]	[NR]	[NR]
Ammonia as N (1:5 KCl extract)	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL 12 metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	27/09/2016
Arsenic	mg/kg	[NT]	[NT]	[NR]	[NR]
Cadmium	mg/kg	[NT]	[NT]	[NR]	[NR]
Copper	mg/kg	[NT]	[NT]	[NR]	[NR]
Lead	mg/kg	[NT]	[NT]	[NR]	[NR]
Mercury	mg/kg	[NT]	[NT]	[NR]	[NR]
Molybdenum	mg/kg	[NT]	[NT]	[NR]	[NR]
Nickel	mg/kg	[NT]	[NT]	[NR]	[NR]
Tin	mg/kg	[NT]	[NT]	[NR]	[NR]
Selenium	mg/kg	[NT]	[NT]	[NR]	[NR]
Silver	mg/kg	[NT]	[NT]	[NR]	[NR]
Zinc	mg/kg	[NT]	[NT]	[NR]	[NR]

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL vTRH(C6-C10)/MBTEXNin soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	22/09/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	[NT]	[NT]	186064-13	85%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	[NT]	[NT]	186064-13	85%
MTBE	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	[NT]	[NT]	186064-13	88%
Toluene	mg/kg	[NT]	[NT]	186064-13	91%
Ethylbenzene	mg/kg	[NT]	[NT]	186064-13	83%
m+p-xylene	mg/kg	[NT]	[NT]	186064-13	81%
o-xylene	mg/kg	[NT]	[NT]	186064-13	82%
Naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa- Trifluorotoluene	%	[NT]	[NT]	186064-13	98%
QUALITYCONTROL svTRH(C10-C36) in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	[NT]	[NT]	186064-13	118%
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	[NT]	[NT]	186064-13	117%
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	[NT]	[NT]	186064-13	112%
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	[NT]	[NT]	186064-13	118%
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	[NT]	[NT]	186064-13	118%
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	[NT]	[NT]	186064-13	113%
Surrogate o-Terphenyl	%	[NT]	[NT]	186064-13	90%
QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	22/09/2016
Dichlorodifluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	mg/kg	[NT]	[NT]	186064-13	81%
cis-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloroform	mg/kg	[NT]	[NT]	186064-13	80%

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QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
2,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	mg/kg	[NT]	[NT]	186064-13	69%
1,1,1-trichloroethane	mg/kg	[NT]	[NT]	186064-13	78%
1,1-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
Trichloroethene	mg/kg	[NT]	[NT]	186064-13	88%
Bromodichloromethane	mg/kg	[NT]	[NT]	186064-13	80%
trans-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	mg/kg	[NT]	[NT]	186064-13	82%
1,2-dibromoethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	mg/kg	[NT]	[NT]	186064-13	91%
1,1,1,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromoform	mg/kg	[NT]	[NT]	186064-13	79%
1,1,1,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	[NT]	[NT]	186064-13	82%
1,2-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
<i>Surrogate</i> Dibromofluorometha	%	[NT]	[NT]	186064-13	94%
<i>Surrogate</i> aaa- Trifluorotoluene	%	[NT]	[NT]	186064-13	96%
<i>Surrogate</i> Toluene-d8	%	[NT]	[NT]	186064-13	103%
<i>Surrogate</i> 4- Bromofluorobenz	%	[NT]	[NT]	186064-13	102%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL SVCH's in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	24/09/2016
1,3-Dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,4-Dichlorobenzene	mg/kg	[NT]	[NT]	186064-13	86%
1,2-Dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-Trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,4-Trichlorobenzene	mg/kg	[NT]	[NT]	186064-13	85%
1,3,5-Trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3,4-Tetrachlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexachlorocyclopentadiene	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	[NT]	[NT]	[NR]	[NR]
Pentachlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Hexachlorobenzene (HCB)	mg/kg	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%	[NT]	[NT]	186064-13	128%
QUALITYCONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	24/09/2016
Naphthalene	mg/kg	[NT]	[NT]	186064-13	93%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	186064-13	94%
Phenanthrene	mg/kg	[NT]	[NT]	186064-13	99%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	186064-13	112%
Pyrene	mg/kg	[NT]	[NT]	186064-13	120%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	186064-13	100%
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	186064-13	95%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%	[NT]	[NT]	186064-13	128%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	24/09/2016
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	186064-13	102%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Speciated Phenols in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-13	22/09/2016
Date analysed	-	[NT]	[NT]	186064-13	24/09/2016
Phenol	mg/kg	[NT]	[NT]	186064-13	80%
2-Chlorophenol	mg/kg	[NT]	[NT]	186064-13	78%
4-Chloro-3-methylphenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2-Methylphenol	mg/kg	[NT]	[NT]	186064-13	70%
3/4-Methylphenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2-Nitrophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,4-Dimethylphenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,4-Dichlorophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,6-Dichlorophenol	mg/kg	[NT]	[NT]	186064-13	70%
2,4,5-Trichlorophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,4,6-Trichlorophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,4-Dinitrophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
4-Nitrophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2,3,4,6-Tetrachlorophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
2-Methyl-4,6-dinitrophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
Pentachlorophenol	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate Phenol-d6	%	[NT]	[NT]	186064-13	118%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	186064-6	22/09/2016    22/09/2016	186064-21	22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016	186064-21	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	186064-6	<0.01    <0.01	186064-21	89%
b-BHC	mg/kg	186064-6	<0.01    <0.01	186064-21	100%
Lindane (g-BHC)	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	186064-6	<0.01    <0.01	186064-21	84%
Aldrin	mg/kg	186064-6	<0.01    <0.01	186064-21	94%
Heptachlor Epoxide	mg/kg	186064-6	<0.01    <0.01	186064-21	96%
g-Chlordane	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
a-Chlordane	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	186064-6	<0.01    <0.01	186064-21	104%
Dieldrin	mg/kg	186064-6	<0.01    <0.01	186064-21	99%
Endrin	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	186064-6	<0.01    <0.01	186064-21	117%
b-Endosulphan	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	186064-6	<0.01    <0.01	186064-21	99%
Methoxychlor	mg/kg	186064-6	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D <sub>14</sub>	%	186064-6	94    100    RPD: 6	186064-21	116%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	186064-6	22/09/2016    22/09/2016	186064-21	22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016	186064-21	24/09/2016
Dichlorovos	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Diazinon	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	186064-6	<0.05    <0.05	186064-21	90%
Ronnel	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Fenitrothion	mg/kg	186064-6	<0.05    <0.05	186064-21	87%
Malathion	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos	mg/kg	186064-6	<0.05    <0.05	186064-21	98%
Parathion-ethyl	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Ethion	mg/kg	186064-6	<0.05    <0.05	186064-21	101%
Bromophos ethyl	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Dimethoate	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	186064-6	<0.05    <0.05	[NR]	[NR]
p-Terphenyl-D14	%	186064-6	94    100    RPD: 6	186064-21	116%
QUALITYCONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date prepared	-	186064-6	22/09/2016    22/09/2016		
Date analysed	-	186064-6	22/09/2016    22/09/2016		
Chromium (VI)	mg/kg	186064-6	<1    <1		
Total Cyanide	mg/kg	186064-6	<0.5    <0.5		
Total Kjeldahl Nitrogen	mg/kg	[NT]	[NT]		
Nitrate-N	mg/kg	[NT]	[NT]		
Nitrite-N	mg/kg	[NT]	[NT]		
Ammonia as N (1:5 KCl extract)	mg/kg	[NT]	[NT]		
QUALITYCONTROL 12 metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date digested	-	186064-6	22/09/2016    22/09/2016		
Date analysed	-	186064-6	27/09/2016    27/09/2016		
Molybdenum	mg/kg	186064-6	<1    <1		
Tin	mg/kg	186064-6	1    1    RPD: 0		
Selenium	mg/kg	186064-6	2    3    RPD: 40		
Silver	mg/kg	186064-6	<1    <1		

QUALITYCONTROL vTRH(C6-C10)/MBTEXNin soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	22/09/2016    22/09/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	186064-6	<25    <25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	186064-6	<25    <25
MTBE	mg/kg	186064-6	<0.5    <0.5
Benzene	mg/kg	186064-6	<0.2    <0.2
Toluene	mg/kg	186064-6	<0.5    <0.5
Ethylbenzene	mg/kg	186064-6	<1    <1
m+p-xylene	mg/kg	186064-6	<2    <2
o-xylene	mg/kg	186064-6	<1    <1
Naphthalene	mg/kg	186064-6	<1    <1
Surrogate aaa- Trifluorotoluene	%	186064-6	103    108    RPD: 5
QUALITYCONTROL svTRH(C10-C36) in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	23/09/2016    23/09/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	186064-6	<50    <50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	186064-6	<100    <100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	186064-6	<100    <100
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	186064-6	<50    <50
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	186064-6	<100    <100
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	186064-6	<100    <100
Surrogate o-Terphenyl	%	186064-6	95    96    RPD: 1
QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	22/09/2016    22/09/2016
Dichlorodifluoromethane	mg/kg	186064-6	<1.0    <1.0
Chloromethane	mg/kg	186064-6	<1.0    <1.0
Vinyl Chloride	mg/kg	186064-6	<1.0    <1.0
Bromomethane	mg/kg	186064-6	<1.0    <1.0
Chloroethane	mg/kg	186064-6	<1.0    <1.0
Trichlorofluoromethane	mg/kg	186064-6	<1.0    <1.0
1,1-Dichloroethene	mg/kg	186064-6	<1.0    <1.0
trans-1,2-dichloroethene	mg/kg	186064-6	<1.0    <1.0
1,1-dichloroethane	mg/kg	186064-6	<1.0    <1.0
cis-1,2-dichloroethene	mg/kg	186064-6	<1.0    <1.0
Bromochloromethane	mg/kg	186064-6	<1.0    <1.0
Chloroform	mg/kg	186064-6	<1.0    <1.0

QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
2,2-dichloropropane	mg/kg	186064-6	<1.0    <1.0
1,2-dichloroethane	mg/kg	186064-6	<1.0    <1.0
1,1,1-trichloroethane	mg/kg	186064-6	<1.0    <1.0
1,1-dichloropropene	mg/kg	186064-6	<1.0    <1.0
Carbon tetrachloride	mg/kg	186064-6	<1.0    <1.0
Dibromomethane	mg/kg	186064-6	<1.0    <1.0
1,2-dichloropropane	mg/kg	186064-6	<1.0    <1.0
Trichloroethene	mg/kg	186064-6	<1.0    <1.0
Bromodichloromethane	mg/kg	186064-6	<1.0    <1.0
trans-1,3-dichloropropene	mg/kg	186064-6	<1.0    <1.0
cis-1,3-dichloropropene	mg/kg	186064-6	<1.0    <1.0
1,1,2-trichloroethane	mg/kg	186064-6	<1.0    <1.0
1,3-dichloropropane	mg/kg	186064-6	<1.0    <1.0
Dibromochloromethane	mg/kg	186064-6	<1.0    <1.0
1,2-dibromoethane	mg/kg	186064-6	<1.0    <1.0
Tetrachloroethene	mg/kg	186064-6	<1.0    <1.0
1,1,1,2-tetrachloroethane	mg/kg	186064-6	<1.0    <1.0
Chlorobenzene	mg/kg	186064-6	<1.0    <1.0
Bromoform	mg/kg	186064-6	<1.0    <1.0
1,1,1,2-tetrachloroethane	mg/kg	186064-6	<1.0    <1.0
1,2,3-trichloropropane	mg/kg	186064-6	<1.0    <1.0
Bromobenzene	mg/kg	186064-6	<1.0    <1.0
2-chlorotoluene	mg/kg	186064-6	<1.0    <1.0
4-chlorotoluene	mg/kg	186064-6	<1.0    <1.0
1,3-dichlorobenzene	mg/kg	186064-6	<1.0    <1.0
1,4-dichlorobenzene	mg/kg	186064-6	<1.0    <1.0
1,2-dichlorobenzene	mg/kg	186064-6	<1.0    <1.0
1,2-dibromo-3-chloropropane	mg/kg	186064-6	<1.0    <1.0
1,2,4-trichlorobenzene	mg/kg	186064-6	<1.0    <1.0
Hexachlorobutadiene	mg/kg	186064-6	<1.0    <1.0
1,2,3-trichlorobenzene	mg/kg	186064-6	<1.0    <1.0
Surrogate Dibromofluorometha	%	186064-6	95    101    RPD: 6
Surrogate aaa- Trifluorotoluene	%	186064-6	92    96    RPD: 4
Surrogate Toluene-d8	%	186064-6	106    109    RPD: 3
Surrogate 4- Bromofluorobenz	%	186064-6	101    106    RPD: 5

QUALITYCONTROL SVCH's in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016
1,3-Dichlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,4-Dichlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,2-Dichlorobenzene	mg/kg	186064-6	<0.5    <0.5
Hexachloroethane	mg/kg	186064-6	<0.5    <0.5
1,2,3-Trichlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,2,4-Trichlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,3,5-Trichlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	186064-6	<0.5    <0.5
1,2,3,4-Tetrachlorobenzene	mg/kg	186064-6	<0.5    <0.5
Hexachlorocyclopentadiene	mg/kg	186064-6	<2    <2
Hexachlorobutadiene	mg/kg	186064-6	<0.5    <0.5
Pentachlorobenzene	mg/kg	186064-6	<0.5    <0.5
Hexachlorobenzene (HCB)	mg/kg	186064-6	<0.5    <0.5
p-Terphenyl-D <sub>14</sub>	%	186064-6	94    100    RPD: 6
QUALITYCONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016
Naphthalene	mg/kg	186064-6	<0.1    <0.1
Acenaphthylene	mg/kg	186064-6	<0.1    <0.1
Acenaphthene	mg/kg	186064-6	<0.1    <0.1
Fluorene	mg/kg	186064-6	<0.1    <0.1
Phenanthrene	mg/kg	186064-6	<0.1    <0.1
Anthracene	mg/kg	186064-6	<0.1    <0.1
Fluoranthene	mg/kg	186064-6	<0.1    <0.1
Pyrene	mg/kg	186064-6	<0.1    <0.1
Benzo(a)anthracene	mg/kg	186064-6	<0.1    <0.1
Chrysene	mg/kg	186064-6	<0.1    <0.1
Benzo(b,j+k)fluoranthene	mg/kg	186064-6	<0.2    <0.2
Benzo(a)pyrene	mg/kg	186064-6	<0.05    <0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	186064-6	<0.1    <0.1
Dibenzo(a,h)anthracene	mg/kg	186064-6	<0.1    <0.1
Benzo(g,h,i)perylene	mg/kg	186064-6	<0.1    <0.1
p-Terphenyl-D <sub>14</sub>	%	186064-6	94    100    RPD: 6

QUALITYCONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016
Arochlor 1016	mg/kg	186064-6	<0.1    <0.1
Arochlor 1221	mg/kg	186064-6	<0.1    <0.1
Arochlor 1232	mg/kg	186064-6	<0.1    <0.1
Arochlor 1242	mg/kg	186064-6	<0.1    <0.1
Arochlor 1248	mg/kg	186064-6	<0.1    <0.1
Arochlor 1254	mg/kg	186064-6	<0.1    <0.1
Arochlor 1260	mg/kg	186064-6	<0.1    <0.1
QUALITYCONTROL Speciated Phenols in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	186064-6	22/09/2016    22/09/2016
Date analysed	-	186064-6	24/09/2016    24/09/2016
Phenol	mg/kg	186064-6	<0.2    <0.2
2-Chlorophenol	mg/kg	186064-6	<0.2    <0.2
4-Chloro-3-methylphenol	mg/kg	186064-6	<5    <5
2-Methylphenol	mg/kg	186064-6	<0.2    <0.2
3/4-Methylphenol	mg/kg	186064-6	<0.4    <0.4
2-Nitrophenol	mg/kg	186064-6	<0.2    <0.2
2,4-Dimethylphenol	mg/kg	186064-6	<0.2    <0.2
2,4-Dichlorophenol	mg/kg	186064-6	<0.2    <0.2
2,6-Dichlorophenol	mg/kg	186064-6	<0.2    <0.2
2,4,5-Trichlorophenol	mg/kg	186064-6	<0.2    <0.2
2,4,6-Trichlorophenol	mg/kg	186064-6	<0.2    <0.2
2,4-Dinitrophenol	mg/kg	186064-6	<4    <4
4-Nitrophenol	mg/kg	186064-6	<4    <4
2,3,4,6-Tetrachlorophenol	mg/kg	186064-6	<0.2    <0.2
2-Methyl-4,6-dinitrophenol	mg/kg	186064-6	<10    <10
Pentachlorophenol	mg/kg	186064-6	<5    <5
Surrogate Phenol-d6	%	186064-6	116    110    RPD: 5

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-51	22/09/2016
Date analysed	-	[NT]	[NT]	186064-51	24/09/2016
Hexachlorobenzene (HCB)	mg/kg	[NT]	[NT]	[NR]	[NR]
a-BHC	mg/kg	[NT]	[NT]	186064-51	90%
b-BHC	mg/kg	[NT]	[NT]	186064-51	118%
Lindane (g-BHC)	mg/kg	[NT]	[NT]	[NR]	[NR]
d-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Heptachlor	mg/kg	[NT]	[NT]	186064-51	77%
Aldrin	mg/kg	[NT]	[NT]	186064-51	88%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	186064-51	94%
g-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
a-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
a-Endosulphan	mg/kg	[NT]	[NT]	[NR]	[NR]
p,p'-DDE	mg/kg	[NT]	[NT]	186064-51	106%
Dieldrin	mg/kg	[NT]	[NT]	186064-51	100%
Endrin	mg/kg	[NT]	[NT]	[NR]	[NR]
p,p'-DDD	mg/kg	[NT]	[NT]	186064-51	125%
b-Endosulphan	mg/kg	[NT]	[NT]	[NR]	[NR]
p,p'-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	186064-51	107%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%	[NT]	[NT]	186064-51	93%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	186064-51	22/09/2016
Date analysed	-	[NT]	[NT]	186064-51	24/09/2016
Dichlorovos	mg/kg	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	[NT]	[NT]	186064-51	88%
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Fenitrothion	mg/kg	[NT]	[NT]	186064-51	86%
Malathion	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	[NT]	[NT]	186064-51	97%
Parathion-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	186064-51	103%
Bromophos ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%	[NT]	[NT]	186064-51	93%

**Report Comments:**

**Asbestos Signatories:**

Asbestos was analysed by Approved Identifier: Lalanee Rupasinghe  
Airborne fibres were analysed by Approved Counter: Not applicable for this job

**Definitions:**

NT: Not tested NA: Test not required INS: Insufficient sample for this test PQL: Practical Quantitation Limit  
<: Less than >: Greater than RPD: Relative Percent Difference LCS: Laboratory Control Sample  
NS: Not Specified NEPM: National Environmental Protection Measure NR: Not Reported

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011

### 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 batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.



16-18 Hayden Court, Myaree, Western Australia 6154  
PO Box 4023 Myaree BC, Western Australia 6950  
tel: +61 8 9317 2505

email: lab@mpl.com.au  
[envirolab.com.au](http://envirolab.com.au)

Envirolab Services (WA) Pty Ltd trading as  
MPL Laboratories | ABN 53 140 099 207

## CERTIFICATE OF ANALYSIS 187921

### **Client:**

**Douglas Partners NT**

PO Box 36858

Winnellie

NT 0821

**Attention:** A Gane

### **Sample log in details:**

Your Reference:	<b><u>78156.02 Humpty Doo</u></b>
No. of samples:	18 Soil
Date samples received:	01/11/2016
Date completed instructions received:	01/11/2016
Location:	

### **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 pages of this report for any comments relating to the results.***

### **Report Details:**

Date results requested by:	3/11/16
Date of Preliminary Report:	Not issued
Issue Date:	3/11/16

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Accredited for compliance with ISO/IEC 17025 - Testing

**Tests not covered by NATA are denoted with \*.**

### **Results Approved By:**

Joshua Lim  
Operations Manager

MPL Reference: 187921  
Revision No: R 00



VHC's in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	1/11/2016
Date analysed	-	3/11/2016	3/11/2016
Dichlorodifluoromethane	mg/kg	<1.0	<1.0
Chloromethane	mg/kg	<1.0	<1.0
Vinyl Chloride	mg/kg	<1.0	<1.0
Bromomethane	mg/kg	<1.0	<1.0
Chloroethane	mg/kg	<1.0	<1.0
Trichlorofluoromethane	mg/kg	<1.0	<1.0
1,1-Dichloroethene	mg/kg	<1.0	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0	<1.0
1,1-dichloroethane	mg/kg	<1.0	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0	<1.0
Bromochloromethane	mg/kg	<1.0	<1.0
Chloroform	mg/kg	<1.0	<1.0
2,2-dichloropropane	mg/kg	<1.0	<1.0
1,2-dichloroethane	mg/kg	<1.0	<1.0
1,1,1-trichloroethane	mg/kg	<1.0	<1.0
1,1-dichloropropene	mg/kg	<1.0	<1.0
Carbon tetrachloride	mg/kg	<1.0	<1.0
Dibromomethane	mg/kg	<1.0	<1.0
1,2-dichloropropane	mg/kg	<1.0	<1.0
Trichloroethene	mg/kg	<1.0	<1.0
Bromodichloromethane	mg/kg	<1.0	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0	<1.0
1,1,2-trichloroethane	mg/kg	<1.0	<1.0
1,3-dichloropropane	mg/kg	<1.0	<1.0
Dibromochloromethane	mg/kg	<1.0	<1.0
1,2-dibromoethane	mg/kg	<1.0	<1.0
Tetrachloroethene	mg/kg	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0
Chlorobenzene	mg/kg	<1.0	<1.0
Bromoform	mg/kg	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0
1,2,3-trichloropropane	mg/kg	<1.0	<1.0
Bromobenzene	mg/kg	<1.0	<1.0
2-chlorotoluene	mg/kg	<1.0	<1.0
4-chlorotoluene	mg/kg	<1.0	<1.0
1,3-dichlorobenzene	mg/kg	<1.0	<1.0
1,4-dichlorobenzene	mg/kg	<1.0	<1.0

VHC's in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
1,2-dichlorobenzene	mg/kg	<1.0	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0	<1.0
Hexachlorobutadiene	mg/kg	<1.0	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0	<1.0
<i>Surrogate</i> Dibromofluorometha	%	103	102
<i>Surrogate</i> aaa-Trifluorotoluene	%	90	96
<i>Surrogate</i> Toluene-d8	%	102	101
<i>Surrogate</i> 4-Bromofluorobenz	%	97	97

SVCH's in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016
1,3-Dichlorobenzene	mg/kg	<0.5	<0.5
1,4-Dichlorobenzene	mg/kg	<0.5	<0.5
1,2-Dichlorobenzene	mg/kg	<0.5	<0.5
Hexachloroethane	mg/kg	<0.5	<0.5
1,2,3-Trichlorobenzene	mg/kg	<0.5	<0.5
1,2,4-Trichlorobenzene	mg/kg	<0.5	<0.5
1,3,5-Trichlorobenzene	mg/kg	<0.5	<0.5
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	<0.5	<0.5
1,2,3,4-Tetrachlorobenzene	mg/kg	<0.5	<0.5
Hexachlorocyclopentadiene	mg/kg	<2	<2
Hexachlorobutadiene	mg/kg	<0.5	<0.5
Pentachlorobenzene	mg/kg	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	<0.5	<0.5
p-Terphenyl-D <sub>14</sub>	%	93	108

vTRH(C6-C10)/MBTEXN in soil	UNITS	187921-11	187921-15
Our Reference:	-----	TSSP/S19	TSSP/S23
Your Reference	-----	28/10/2016	28/10/2016
Date Sampled			
Type of sample		Soil	Soil
Date extracted	-	01/11/2016	1/11/2016
Date analysed	-	3/11/2016	3/11/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25
TRHC <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25
MTBE	mg/kg	<0.5	<0.5
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	98

svTRH(C10-C36) in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	<50	<50
TRH>C <sub>10</sub> -C <sub>16</sub> less N (F2)	mg/kg	<50	<50
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	<100	<100
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	<100	<100
Surrogate o-Terphenyl	%	97	95

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016
Arochlor 1016	mg/kg	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Total Positive PAHs	mg/kg	NO +VE PAHS	NO +VE PAHS
p-Terphenyl-D <sub>14</sub>	%	93	108

Speciated Phenols in Soil	UNITS	187921-11	187921-15
Our Reference:	-----	TSSP/S19	TSSP/S23
Your Reference	-----	28/10/2016	28/10/2016
Date Sampled			
Type of sample		Soil	Soil
Date extracted	-	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016
Phenol	mg/kg	<0.2	<0.2
2-Chlorophenol	mg/kg	<0.2	<0.2
4-Chloro-3-methylphenol	mg/kg	<5	<5
2-Methylphenol	mg/kg	<0.2	<0.2
3/4-Methylphenol	mg/kg	<0.4	<0.4
2-Nitrophenol	mg/kg	<0.2	<0.2
2,4-Dimethylphenol	mg/kg	<0.2	<0.2
2,4-Dichlorophenol	mg/kg	<0.2	<0.2
2,6-Dichlorophenol	mg/kg	<0.2	<0.2
2,4,5-Trichlorophenol	mg/kg	<0.2	<0.2
2,4,6-Trichlorophenol	mg/kg	<0.2	<0.2
2,4-Dinitrophenol	mg/kg	<4	<4
4-Nitrophenol	mg/kg	<4	<4
2,3,4,6-Tetrachlorophenol	mg/kg	<0.2	<0.2
2-Methyl-4,6-dinitrophenol	mg/kg	<10	<10
Pentachlorophenol	mg/kg	<5	<5
<i>Surrogate 2,4,6-Tribromophenol</i>	%	73	76
<i>Surrogate Phenol-d6</i>	%	83	84

Low Level OCP in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-1 VMS/33 28/10/2016 Soil	187921-2 VMS/34 28/10/2016 Soil	187921-3 VMS/35 28/10/2016 Soil	187921-4 VMS/36 28/10/2016 Soil	187921-5 VMS/37 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	0.07	0.03	0.03	0.01	<0.01
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p</i> -Terphenyl-D <sub>14</sub>	%	99	99	97	85	98

Low Level OCP in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-6 VMS/38 28/10/2016 Soil	187921-7 VMS/39 28/10/2016 Soil	187921-8 VMS/40 28/10/2016 Soil	187921-9 281016Rep2 28/10/2016 Soil	187921-10 TSSP/S18 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	0.11
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p</i> -Terphenyl-D <sub>14</sub>	%	91	84	87	98	96

Low Level OCP in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-12 TSSP/S20 28/10/2016 Soil	187921-13 TSSP/S21 28/10/2016 Soil	187921-14 TSSP/S22 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	mg/kg	0.02	<0.01	<0.01	<0.01	<0.01
a-Chlordane	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	mg/kg	0.07	0.03	0.04	0.03	0.12
Endrin	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
<i>p</i> -Terphenyl-D <sub>14</sub>	%	93	103	104	104	108

Low Level OCP in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-16 TSSP/S24 28/10/2016 Soil	187921-17 TSSP/S25 28/10/2016 Soil	187921-18 281016Rep1 28/10/2016 Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	<0.01	<0.01	<0.01
a-BHC	mg/kg	<0.01	<0.01	<0.01
b-BHC	mg/kg	<0.01	<0.01	<0.01
Lindane (g-BHC)	mg/kg	<0.01	<0.01	<0.01
d-BHC	mg/kg	<0.01	<0.01	<0.01
Heptachlor	mg/kg	<0.01	0.01	0.02
Aldrin	mg/kg	<0.01	<0.01	<0.01
Heptachlor Epoxide	mg/kg	<0.01	0.02	0.02
g-Chlordane	mg/kg	<0.01	0.06	0.06
a-Chlordane	mg/kg	<0.01	0.01	<0.01
a-Endosulphan	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDE	mg/kg	<0.01	<0.01	<0.01
Dieldrin	mg/kg	0.05	0.07	0.06
Endrin	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDD	mg/kg	<0.01	<0.01	<0.01
b-Endosulphan	mg/kg	<0.01	<0.01	<0.01
<i>p,p'</i> -DDT	mg/kg	<0.01	<0.01	<0.01
Endosulfan Sulphate	mg/kg	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	<0.01	<0.01	<0.01
<i>p</i> -Terphenyl-D <sub>14</sub>	%	96	105	101

Organophosphorus Pesticides	UNITS	187921-1	187921-2	187921-3	187921-4	187921-5
Our Reference:	-----	VMS/33	VMS/34	VMS/35	VMS/36	VMS/37
Your Reference	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Date Sampled						
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	99	99	97	85	98

Organophosphorus Pesticides	UNITS	187921-6	187921-7	187921-8	187921-9	187921-10
Our Reference:	-----	VMS/38	VMS/39	VMS/40	281016Rep2	TSSP/S18
Your Reference	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Date Sampled						
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	91	84	87	98	96

Organophosphorus Pesticides	UNITS	187921-11	187921-12	187921-13	187921-14	187921-15
Our Reference:	-----	TSSP/S19	TSSP/S20	TSSP/S21	TSSP/S22	TSSP/S23
Your Reference	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Date Sampled						
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016	02/11/2016	02/11/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	0.19	<0.05	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	93	103	104	104	108

Organophosphorus Pesticides	UNITS	187921-16	187921-17	187921-18
Our Reference:	-----	TSSP/S24	TSSP/S25	281016Rep1
Your Reference	-----	28/10/2016	28/10/2016	28/10/2016
Date Sampled				
Type of sample		Soil	Soil	Soil
Date extracted	-	01/11/2016	01/11/2016	01/11/2016
Date analysed	-	02/11/2016	02/11/2016	02/11/2016
Dichlorovos	mg/kg	<0.05	<0.05	<0.05
Diazinon	mg/kg	<0.05	<0.05	<0.05
Chlorpyrifos methyl	mg/kg	<0.05	<0.05	<0.05
Ronnel	mg/kg	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	<0.05	<0.05	<0.05
Malathion	mg/kg	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	<0.05	<0.05	<0.05
Parathion-ethyl	mg/kg	<0.05	<0.05	<0.05
Ethion	mg/kg	<0.05	<0.05	<0.05
Bromophos ethyl	mg/kg	<0.05	<0.05	<0.05
Dimethoate	mg/kg	<0.05	<0.05	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05	<0.05	<0.05
p-Terphenyl-D14	%	96	105	101

Miscellaneous Inorg - soil			
Our Reference:	UNITS	187921-11	187921-15
Your Reference	-----	TSSP/S19	TSSP/S23
Date Sampled	-----	28/10/2016	28/10/2016
Type of sample		Soil	Soil
Date prepared	-	02/11/2016	02/11/2016
Date analysed	-	02/11/2016	02/11/2016
Total Cyanide	mg/kg	<0.5	<0.5
Fluoride	mg/kg	<0.5	<0.5
Chromium (VI)	mg/kg	<1	<1

Metals - soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	187921-11 TSSP/S19 28/10/2016 Soil	187921-15 TSSP/S23 28/10/2016 Soil
Date digested	-	1/11/2016	1/11/2016
Date analysed	-	3/11/2016	3/11/2016
Arsenic	mg/kg	8	6
Cadmium	mg/kg	<0.4	<0.4
Copper	mg/kg	8	7
Lead	mg/kg	11	11
Mercury	mg/kg	<0.1	<0.1
Molybdenum	mg/kg	<1	<1
Nickel	mg/kg	3	3
Tin	mg/kg	<1	<1
Selenium	mg/kg	<2	<2
Silver	mg/kg	<1	<1
Zinc	mg/kg	19	13

Moisture						
Our Reference:	UNITS	187921-1	187921-2	187921-3	187921-4	187921-5
Your Reference	-----	VMS/33	VMS/34	VMS/35	VMS/36	VMS/37
Date Sampled	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Date analysed	-	2/11/2016	2/11/2016	2/11/2016	2/11/2016	2/11/2016
Moisture	%	14	11	9.7	11	6.1

Moisture						
Our Reference:	UNITS	187921-6	187921-7	187921-8	187921-9	187921-10
Your Reference	-----	VMS/38	VMS/39	VMS/40	281016Rep2	TSSP/S18
Date Sampled	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Date analysed	-	2/11/2016	2/11/2016	2/11/2016	2/11/2016	2/11/2016
Moisture	%	11	6.1	8.4	8.1	14

Moisture						
Our Reference:	UNITS	187921-11	187921-12	187921-13	187921-14	187921-15
Your Reference	-----	TSSP/S19	TSSP/S20	TSSP/S21	TSSP/S22	TSSP/S23
Date Sampled	-----	28/10/2016	28/10/2016	28/10/2016	28/10/2016	28/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Date analysed	-	2/11/2016	2/11/2016	2/11/2016	2/11/2016	2/11/2016
Moisture	%	13	17	14	7.1	14

Moisture				
Our Reference:	UNITS	187921-16	187921-17	187921-18
Your Reference	-----	TSSP/S24	TSSP/S25	281016Rep1
Date Sampled	-----	28/10/2016	28/10/2016	28/10/2016
Type of sample		Soil	Soil	Soil
Date prepared	-	1/11/2016	1/11/2016	1/11/2016
Date analysed	-	2/11/2016	2/11/2016	2/11/2016
Moisture	%	11	12	11

Method ID	Methodology Summary
<b>ORG-014</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
<b>ORG-013/014</b>	VOC's in soil by methanolic extraction and water directly by purge and trap GCMS
<b>ORG-012</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
<b>ORG-016</b>	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 Guideline on Investigation Levels for Soil and Groundwater.
<b>ORG-003</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
<b>ORG-006</b>	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
<b>ORG-012</b>	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.
<b>ORG-012</b>	For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
<b>ORG-004</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
<b>ORG-005/012</b>	Organochlorine Pesticides in soil by DCM:Acetone extraction and water by DCM extraction with determination by GC-ECD/GC-MS.
<b>ORG-015</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS or GC-MS/MS.
<b>ORG-008/015</b>	Organophosphorus Pesticides in soil by DCM:Acetone extraction and water by DCM extraction with determination by GC-ECD/GC-MS.
<b>INORG-014</b>	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
<b>INORG-026</b>	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Soils reported from a 1:5 water extract unless otherwise specified.
<b>INORG-118</b>	Hexavalent Chromium by Ion Chromatographic separation and colourimetric determination.
<b>METALS-020</b>	Metals in soil and water by ICP-OES.

Method ID	Methodology Summary
<b>Metals-021</b>	Determination of Mercury by Cold Vapour AAS.
<b>INORG-008</b>	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VHC's in soil						Base II Duplicate II %RPD		
Date extracted	-			1/11/2016	[NT]	[NT]	LCS-1	1/11/2016
Date analysed	-			3/11/2016	[NT]	[NT]	LCS-1	3/11/2016
Dichlorodifluoromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
cis-1,2-dichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroform	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
2,2-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
1,1,1-trichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	84%
1,1-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromomethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Trichloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	90%
Bromodichloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
trans-1,3-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	84%
1,2-dibromoethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	86%
1,1,1,2-tetrachloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromoform	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Bromobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]

Client Reference: 78156.02 Humpty Doo

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VHC's in soil						Base II Duplicate II %RPD		
1,4-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	LCS-1	85%
1,2-dichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	ORG-014	<1.0	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluorometha	%		ORG-013/014	99	[NT]	[NT]	LCS-1	97%
Surrogate aaa-Trifluorotoluene	%		ORG-014	97	[NT]	[NT]	LCS-1	100%
Surrogate Toluene-d8	%		ORG-013/014	101	[NT]	[NT]	LCS-1	99%
Surrogate 4-Bromofluorobenz	%		ORG-013/014	97	[NT]	[NT]	LCS-1	102%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
SVCH's in Soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
1,3-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,4-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	LCS-1	94%
1,2-Dichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachloroethane	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,4-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	LCS-1	88%
1,3,5-Trichlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3,5 & 1,2,4,5-Tetrachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
1,2,3,4-Tetrachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachlorocyclopentadiene	mg/kg	2	ORG-012	<2	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Pentachlorobenzene	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
Hexachlorobenzene (HCB)	mg/kg	0.5	ORG-012	<0.5	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%		ORG-012	98	[NT]	[NT]	LCS-1	90%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/MBTEXN in soil						Base II Duplicate II %RPD		
Date extracted	-			1/11/2016	[NT]	[NT]	LCS-1	1/11/2016
Date analysed	-			3/11/2016	[NT]	[NT]	LCS-1	3/11/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	88%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	88%
MTBE	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	LCS-1	83%
Toluene	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	LCS-1	88%
Ethylbenzene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	89%
m+p-xylene	mg/kg	2	ORG-016	<2	[NT]	[NT]	LCS-1	91%
o-xylene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	93%
Naphthalene	mg/kg	1	ORG-016	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		ORG-016	99	[NT]	[NT]	LCS-1	111%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C36) in soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	110%
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	111%
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	115%
TRH>C <sub>10</sub> - C <sub>16</sub>	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	112%
TRH>C <sub>16</sub> - C <sub>34</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	111%
TRH>C <sub>34</sub> - C <sub>40</sub>	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	119%
Surrogate o-Terphenyl	%		ORG-003	95	[NT]	[NT]	LCS-1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
Arochlor 1016	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	LCS-1	88%
Arochlor 1260	mg/kg	0.1	ORG-006	<0.1	[NT]	[NT]	[NR]	[NR]

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
Naphthalene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	88%
Acenaphthylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	96%
Phenanthrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	94%
Anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	96%
Pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	94%
Benzo(a)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	95%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	ORG-012	<0.05	[NT]	[NT]	LCS-1	95%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D14	%		ORG-012	98	[NT]	[NT]	LCS-1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Speciated Phenols in Soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
Phenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	86%
2-Chlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	86%
4-Chloro-3-methylphenol	mg/kg	5	ORG-012	<5	[NT]	[NT]	[NR]	[NR]
2-Methylphenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	88%
3/4-Methylphenol	mg/kg	0.4	ORG-012	<0.4	[NT]	[NT]	[NR]	[NR]
2-Nitrophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dimethylphenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,6-Dichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	LCS-1	84%
2,4,5-Trichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4,6-Trichlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2,4-Dinitrophenol	mg/kg	4	ORG-012	<4	[NT]	[NT]	[NR]	[NR]
4-Nitrophenol	mg/kg	4	ORG-012	<4	[NT]	[NT]	[NR]	[NR]
2,3,4,6-Tetrachlorophenol	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
2-Methyl-4,6-dinitrophenol	mg/kg	10	ORG-012	<10	[NT]	[NT]	[NR]	[NR]

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Speciated Phenols in Soil						Base II Duplicate II %RPD		
Pentachlorophenol	mg/kg	5	ORG-012	<5	[NT]	[NT]	[NR]	[NR]
Surrogate 2,4,6-Tribromophenol	%		ORG-012	82	[NT]	[NT]	LCS-1	82%
Surrogate Phenol-d6	%		ORG-012	73	[NT]	[NT]	LCS-1	86%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Low Level OCP in soil						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	187921-1	01/11/2016    01/11/2016	LCS-1	01/11/2016
Date analysed	-			02/11/2016	187921-1	02/11/2016    02/11/2016	LCS-1	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	92%
b-BHC	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	106%
Lindane (g-BHC)	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	94%
Aldrin	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	91%
Heptachlor Epoxide	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	92%
g-Chlordane	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
a-Chlordane	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	91%
Dieldrin	mg/kg	0.01	ORG-012	<0.01	187921-1	0.07    0.07    RPD: 0	LCS-1	90%
Endrin	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	98%
b-Endosulphan	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	LCS-1	83%
Methoxychlor	mg/kg	0.01	ORG-012	<0.01	187921-1	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D14	%		ORG-005/012	98	187921-1	99    87    RPD: 13	LCS-1	90%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			01/11/2016	187921-1	01/11/2016    01/11/2016	LCS-1	01/11/2016
Date analysed	-			02/11/2016	187921-1	02/11/2016    02/11/2016	LCS-1	02/11/2016
Dichlorovos	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Diazinon	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	LCS-1	96%
Ronnel	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Fenitrothion	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	LCS-1	109%
Malathion	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	LCS-1	99%
Parathion-ethyl	mg/kg	0.05	ORG-008/015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Ethion	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	LCS-1	115%
Bromophos ethyl	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Dimethoate	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	0.05	ORG-015	<0.05	187921-1	<0.05    <0.05	[NR]	[NR]
p-Terphenyl-D14	%		ORG-008/015	98	187921-1	99    87    RPD: 13	LCS-1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorg - soil						Base II Duplicate II %RPD		
Date prepared	-			01/11/2016	[NT]	[NT]	LCS-1	01/11/2016
Date analysed	-			02/11/2016	[NT]	[NT]	LCS-1	02/11/2016
Total Cyanide	mg/kg	0.5	INORG-014	[NT]	[NT]	[NT]	[NR]	[NR]
Fluoride	mg/kg	0.5	INORG-026	<0.5	[NT]	[NT]	LCS-1	102%
Chromium (VI)	mg/kg	1	INORG-118	<1	[NT]	[NT]	LCS-1	106%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Metals - soil						Base II Duplicate II %RPD		
Date digested	-			1/11/2016	[NT]	[NT]	LCS-1	1/11/2016
Date analysed	-			3/11/2016	[NT]	[NT]	LCS-1	3/11/2016
Arsenic	mg/kg	2	METALS-020	<2	[NT]	[NT]	LCS-1	100%
Cadmium	mg/kg	0.4	METALS-020	<0.4	[NT]	[NT]	LCS-1	100%
Copper	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	104%
Lead	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	101%
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	LCS-1	116%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Metals - soil						Base    Duplicate    %RPD		
Molybdenum	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	110%
Nickel	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	107%
Tin	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	94%
Selenium	mg/kg	2	METALS-020	<2	[NT]	[NT]	LCS-1	95%
Silver	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	84%
Zinc	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	101%

QUALITYCONTROL	UNITS	PQL	METHOD	Blank
Moisture				
Date prepared	-			01/11/2016
Date analysed	-			02/11/2016
Moisture	%	0.1	INORG-008	<0.10

QUALITYCONTROL	UNITS	Dup. Sm#	Duplicate	Spike Sm#	Spike % Recovery
VHC's in soil			Base + Duplicate + %RPD		
Date extracted	-	187921-11	01/11/2016    1/11/2016	187921-15	1/11/2016
Date analysed	-	187921-11	3/11/2016    3/11/2016	187921-15	3/11/2016
Dichlorodifluoromethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Chloromethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Vinyl Chloride	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Bromomethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Chloroethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Trichlorofluoromethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,1-Dichloroethene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,1-dichloroethane	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
cis-1,2-dichloroethene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Bromochloromethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Chloroform	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
2,2-dichloropropane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2-dichloroethane	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
1,1,1-trichloroethane	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
1,1-dichloropropene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Carbon tetrachloride	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Dibromomethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2-dichloropropane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Trichloroethene	mg/kg	187921-11	<1.0    <1.0	187921-15	91%

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QUALITYCONTROL VHC's in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Bromodichloromethane	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
trans-1,3-dichloropropene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,3-dichloropropane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Dibromochloromethane	mg/kg	187921-11	<1.0    <1.0	187921-15	83%
1,2-dibromoethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Tetrachloroethene	mg/kg	187921-11	<1.0    <1.0	187921-15	85%
1,1,1,2-tetrachloroethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Chlorobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Bromoform	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Bromobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
2-chlorotoluene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
4-chlorotoluene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	187921-11	<1.0    <1.0	187921-15	82%
1,2-dichlorobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Hexachlorobutadiene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	187921-11	<1.0    <1.0	[NR]	[NR]
Surrogate Dibromofluorometha	%	187921-11	103    99    RPD: 4	187921-15	103%
Surrogate aaa- Trifluorotoluene	%	187921-11	90    92    RPD: 2	187921-15	94%
Surrogate Toluene-d8	%	187921-11	102    101    RPD: 1	187921-15	102%
Surrogate 4- Bromofluorobenz	%	187921-11	97    99    RPD: 2	187921-15	102%

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QUALITYCONTROL SVCH's in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016  01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016  02/11/2016	187921-15	02/11/2016
1,3-Dichlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
1,4-Dichlorobenzene	mg/kg	187921-11	<0.5  <0.5	187921-15	90%
1,2-Dichlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
Hexachloroethane	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
1,2,3-Trichlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
1,2,4-Trichlorobenzene	mg/kg	187921-11	<0.5  <0.5	187921-15	81%
1,3,5-Trichlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
1,2,3,5 & 1,2,4,5- Tetrachlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
1,2,3,4-Tetrachlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
Hexachlorocyclopentadiene	mg/kg	187921-11	<2  <2	[NR]	[NR]
Hexachlorobutadiene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
Pentachlorobenzene	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
Hexachlorobenzene (HCB)	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
p-Terphenyl-D14	%	187921-11	93  96  RPD: 3	187921-15	92%
QUALITYCONTROL VTRH(C6-C10)/MBTEXN in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016  1/11/2016	187921-15	1/11/2016
Date analysed	-	187921-11	3/11/2016  3/11/2016	187921-15	3/11/2016
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	187921-11	<25  <25	187921-15	76%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	187921-11	<25  <25	187921-15	76%
MTBE	mg/kg	187921-11	<0.5  <0.5	[NR]	[NR]
Benzene	mg/kg	187921-11	<0.2  <0.2	187921-15	77%
Toluene	mg/kg	187921-11	<0.5  <0.5	187921-15	77%
Ethylbenzene	mg/kg	187921-11	<1  <1	187921-15	75%
m+p-xylene	mg/kg	187921-11	<2  <2	187921-15	75%
o-xylene	mg/kg	187921-11	<1  <1	187921-15	75%
Naphthalene	mg/kg	187921-11	<1  <1	[NR]	[NR]
Surrogate aaa- Trifluorotoluene	%	187921-11	92  95  RPD: 3	187921-15	96%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016  01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016  02/11/2016	187921-15	02/11/2016
Arochlor 1016	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	187921-11	<0.1    <0.1	187921-15	88%
Arochlor 1260	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
QUALITYCONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016  01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016  02/11/2016	187921-15	02/11/2016
Naphthalene	mg/kg	187921-11	<0.1    <0.1	187921-15	88%
Acenaphthylene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Acenaphthene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Fluorene	mg/kg	187921-11	<0.1    <0.1	187921-15	86%
Phenanthrene	mg/kg	187921-11	<0.1    <0.1	187921-15	90%
Anthracene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Fluoranthene	mg/kg	187921-11	<0.1    <0.1	187921-15	92%
Pyrene	mg/kg	187921-11	<0.1    <0.1	187921-15	94%
Benzo(a)anthracene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Chrysene	mg/kg	187921-11	<0.1    <0.1	187921-15	105%
Benzo(b,j+k)fluoranthene	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	187921-11	<0.05    <0.05	187921-15	93%
Indeno(1,2,3-c,d)pyrene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	187921-11	<0.1    <0.1	[NR]	[NR]
p-Terphenyl-D14	%	187921-11	93    96    RPD: 3	187921-15	92%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Speciated Phenols in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016    01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016    02/11/2016	187921-15	02/11/2016
Phenol	mg/kg	187921-11	<0.2    <0.2	187921-15	80%
2-Chlorophenol	mg/kg	187921-11	<0.2    <0.2	187921-15	76%
4-Chloro-3-methylphenol	mg/kg	187921-11	<5    <5	[NR]	[NR]
2-Methylphenol	mg/kg	187921-11	<0.2    <0.2	187921-15	71%
3/4-Methylphenol	mg/kg	187921-11	<0.4    <0.4	[NR]	[NR]
2-Nitrophenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2,4-Dimethylphenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2,4-Dichlorophenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2,6-Dichlorophenol	mg/kg	187921-11	<0.2    <0.2	187921-15	94%
2,4,5-Trichlorophenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2,4,6-Trichlorophenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2,4-Dinitrophenol	mg/kg	187921-11	<4    <4	[NR]	[NR]
4-Nitrophenol	mg/kg	187921-11	<4    <4	[NR]	[NR]
2,3,4,6-Tetrachlorophenol	mg/kg	187921-11	<0.2    <0.2	[NR]	[NR]
2-Methyl-4,6-dinitrophenol	mg/kg	187921-11	<10    <10	[NR]	[NR]
Pentachlorophenol	mg/kg	187921-11	<5    <5	[NR]	[NR]
Surrogate 2,4,6-Tribromophenol	%	187921-11	73    74    RPD: 1	187921-15	86%
Surrogate Phenol-d6	%	187921-11	83    83    RPD: 0	187921-15	81%

Client Reference: 78156.02 Humpty Doo

QUALITYCONTROL Low Level OCP in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016    01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016    02/11/2016	187921-15	02/11/2016
Hexachlorobenzene (HCB)	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
a-BHC	mg/kg	187921-11	<0.01    <0.01	187921-15	77%
b-BHC	mg/kg	187921-11	<0.01    <0.01	187921-15	81%
Lindane (g-BHC)	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
d-BHC	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
Heptachlor	mg/kg	187921-11	<0.01    <0.01	187921-15	99%
Aldrin	mg/kg	187921-11	<0.01    <0.01	187921-15	97%
Heptachlor Epoxide	mg/kg	187921-11	<0.01    <0.01	187921-15	89%
g-Chlordane	mg/kg	187921-11	0.02    0.02    RPD: 0	[NR]	[NR]
a-Chlordane	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
a-Endosulphan	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
p,p'-DDE	mg/kg	187921-11	<0.01    <0.01	187921-15	89%
Dieldrin	mg/kg	187921-11	0.07    0.06    RPD: 15	187921-15	96%
Endrin	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
p,p'-DDD	mg/kg	187921-11	<0.01    <0.01	187921-15	104%
b-Endosulphan	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
p,p'-DDT	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
Endosulfan Sulphate	mg/kg	187921-11	<0.01    <0.01	187921-15	103%
Methoxychlor	mg/kg	187921-11	<0.01    <0.01	[NR]	[NR]
p-Terphenyl-D <sub>14</sub>	%	187921-11	93    96    RPD: 3	187921-15	92%

**Client Reference: 78156.02 Humpty Doo**

QUALITYCONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	187921-11	01/11/2016    01/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016    02/11/2016	187921-15	02/11/2016
Dichlorovos	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Diazinon	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos methyl	mg/kg	187921-11	<0.05    <0.05	187921-15	92%
Ronnel	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Fenitrothion	mg/kg	187921-11	<0.05    <0.05	187921-15	85%
Malathion	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Chlorpyrifos	mg/kg	187921-11	0.19    0.18    RPD: 5	187921-15	93%
Parathion-ethyl	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Ethion	mg/kg	187921-11	<0.05    <0.05	187921-15	105%
Bromophos ethyl	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Dimethoate	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
Azinphos methyl (Guthion)	mg/kg	187921-11	<0.05    <0.05	[NR]	[NR]
p-Terphenyl-D14	%	187921-11	93    96    RPD: 3	187921-15	92%
QUALITYCONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	187921-11	02/11/2016    02/11/2016	187921-15	01/11/2016
Date analysed	-	187921-11	02/11/2016    02/11/2016	187921-15	02/11/2016
Total Cyanide	mg/kg	187921-11	<0.5    <0.5	[NR]	[NR]
Chromium (VI)	mg/kg	187921-11	<1    <1	[NR]	[NR]
QUALITYCONTROL Metals - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	187921-11	1/11/2016    1/11/2016	187921-15	1/11/2016
Date analysed	-	187921-11	3/11/2016    3/11/2016	187921-15	3/11/2016
Arsenic	mg/kg	187921-11	8    9    RPD: 12	187921-15	96%
Cadmium	mg/kg	187921-11	<0.4    <0.4	187921-15	94%
Copper	mg/kg	187921-11	8    7    RPD: 13	187921-15	118%
Lead	mg/kg	187921-11	11    13    RPD: 17	187921-15	93%
Mercury	mg/kg	187921-11	<0.1    <0.1	187921-15	123%
Molybdenum	mg/kg	187921-11	<1    <1	187921-15	101%
Nickel	mg/kg	187921-11	3    4    RPD: 29	187921-15	105%
Tin	mg/kg	187921-11	<1    <1	187921-15	89%
Selenium	mg/kg	187921-11	<2    3	187921-15	92%
Silver	mg/kg	187921-11	<1    <1	187921-15	86%
Zinc	mg/kg	187921-11	19    16    RPD: 17	187921-15	109%

**Report Comments:**

**Asbestos Signatories:**

Asbestos was analysed by Approved Identifier: Not applicable for this job  
Airborne fibres were analysed by Approved Counter: Not applicable for this job

**Definitions:**

NT: Not tested NA: Test not required INS: Insufficient sample for this test PQL: Practical Quantitation Limit  
<: Less than >: Greater than RPD: Relative Percent Difference LCS: Laboratory Control Sample  
NS: Not Specified NEPM: National Environmental Protection Measure NR: Not Reported

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011

### 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 batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

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## **Appendix D**

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QA/QC Data Quality Assessment

**QUALITY ASSURANCE/QUALITY CONTROL**  
**Lot 3, Freds Pass Road, Humpty Doo**

**1. DATA QUALITY OBJECTIVES**

Data quality objectives (DQO) were developed for the soil sampling undertaken to ensure the integrity and reproducibility of the tests and to provide a check on the potential for cross-contamination during the sampling process.

The procedures undertaken to achieve the DQO included deployment of trained personnel familiar with soil and groundwater sampling techniques. Laboratory QA/QC testing was carried out by the primary laboratory (Envirolab Group) and a secondary laboratory (ALS Environmental), both of which are NATA-accredited laboratories.

Quality Assurance (QA) was maintained by:

- compliance with a Project Quality Plan written for the objectives of the study;
- using qualified environmental scientists and engineers to undertake the field supervision and sampling;
- following the DP operating procedures for soil sampling, field testing and decontamination as presented in Table D1 below; and
- using National Association of Testing Authorities (NATA)-registered laboratories for sample testing that utilise standard laboratory methods (including in-house tests) of the US EPA, the APHA and Australian Standards.

**Table D1: Field Procedures**

Abbreviation	Procedure Name
FPM LOG	Logging
FPM DECONT	Decontamination of Personnel and Equipment
FPM ENVID	Sample Identification, Handling, Transport and Storage of Contaminated Samples
FPM ENVSAMP	Sampling of Contaminated Soils and Sludges
FPM PIDETC	Operation of Field Analysers

(From Douglas Partners Field Procedures Manual)

**2. DATA QUALITY INDICATORS**

The analysis of quality control (QC) duplicate samples and laboratory in-house QA/QC procedures was assessed against the following data quality indicators (DQIs):

- conformance with specified holding times;
- accuracy of spiked sample recoveries within the acceptable range (70-130% for inorganic contaminants/metals and 60-140% organics);

- field blind replicates collected at a minimum frequency of one each for every 20 samples;
- field split replicates collected at a minimum frequency of one each for every 20 samples (it is acknowledged that this DQI was not achieved for the MD Zone as no split replicates were collected during site works);
- field and laboratory replicate samples should have a precision average of +/- 50% relative percent difference (RPD) – see further comments in Section 3; and
- concentration of contaminants in laboratory reagents and blanks should be below the practical quantitation limits.

### 3. FIELD QUALITY ASSURANCE / QUALITY CONTROL

DP tested eight blind replicate samples. This process involved splitting a primary sample into two during field work, then sending both samples to the primary laboratory for analysis without any indication of their duplication. Both sets of soil samples were generally analysed for the same parameters. This procedure is known as 'Blind Replicate or Duplicate Sampling'.

DP did not carry out split replicate sampling, where split samples are sent to different laboratories, during site works for the MD Zone but they were undertaken during testing for the SD Zone, and details of this are presented in our report for the SD Zone.

A measure of laboratory precision was obtained by calculating the relative percent difference (RPD) between duplicate pairs, as shown in equation (1) below. DP generally adopts a RPD criterion of between less than 50% as being acceptable, depending on the contaminant.

$$\%RPD = \frac{|C_{original} - C_{duplicate}|}{Average(C_{original}, C_{duplicate})} \times 100 \quad (1)$$

Of the eight blind replicates tested during this assessment, six recorded RPD values of 0% for all contaminants. The other two had RPD values of 7% and 15% for dieldrin and one of these had RPD values of 15% for chlordane and 14% for heptachlor. It should also be noted that the differences in test results for these two were only 0.01 mg/kg.

In accordance with the current NEPM, samples with an RPD of greater than 30% would be subject to review of laboratory methods. If DP then considered that laboratory methods were appropriate, the RPD limit of 50% would be adopted. No replicates tested during this work were in these categories.

During investigation of the MD Zone, a total of 73 primary samples were analysed, plus eight blind replicate samples and no split replicate samples. No trip blank or rinsate blanks were collected or analysed. The ratio of blind replicates to primary samples was greater than one per 10 samples, and one per 20 samples as recommended in AS4482.1 and it is therefore considered adequate for this investigation. No split replicates were collected nor were trip or rinsate blanks. DP acknowledges that the recommended frequencies of split replicates and blanks were not met during the soil sampling and comments relating to both are given in the following sections. It is noted that two split replicate samples were collected out of a total of 80 primary samples during sampling for the SD Zone.

#### 4. DETAILS OF SOIL ANALYSIS

A summary of the QC soil sampling programme is provided in Table D2 below:

**Table D2: QC Soil Sampling Programme**

Sample Dates	No. of Primary Samples	No. of Blind Reps	Acceptable (Y/N)	No. of Split Reps	Acceptable (Y/N)	No. of Trip Blanks	No. of Rinsate Blanks	Acceptable (Y/N)
14.9.16 15.9.16 28.10.16 5.11.16	73	9	Y	0	N	0	0	N

##### 4.1 Blind Replicate Samples

In sample pairs where both results are below the laboratory limit of reporting (LOR), DP considers a calculated RPD of zero to be valid.

The results of blind duplicate testing for soil samples are provided in Table D3 below.

**Table D3: Soil Blind Duplicate Analysis**

Sample ID	Analyte								
	Aldrin + Dieldrin	Chlordane	DDT+DDE DDD	Endosulfan	Endrin	Heptachlor TEQ*	HCB	Methoxychlor	Chloropyrifos
<b>HSR/TP26/S2</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep5 14092016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>HSR/TP27/B</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep4 14092016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>HSR/TP28/S2</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep1 15092016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>HSR/TP28/S3</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep2 15092016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>HSR/TP30/B</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep1 14092016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>VM/S40</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep2 28102016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	0	0	0	0	0	0	0	0	0
<b>TSSP/S25</b>	0.07	0.07	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.05
Rep1 28102016	0.06	0.06	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.05
RPD (%)	15	15	0	0	0	14	0	0	0

**Table D3 Continued**

Sample ID	Analyte								
	Aldrin + Dieldrin	Chlordane	DDT+DDE DDD	Endosulfan	Endrin	Heptachlor TEQ*	HCB	Methoxychlor	Chlorpyrifos
ASB/TP28/SP2	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Rep7 14092016	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
RPD (%)	7	0	0	0	0	0	0	0	0

Results in mg/kg unless otherwise stated

\* Sum of twice the heptachlor epoxide concentration and the heptachlor concentration

All the RPDs are below the 50% criterion and are therefore considered acceptable.

#### 4.2 Split Replicate Samples

No split replicate sampling was undertaken during sampling and testing for the MD Zone. The absence of split replicates is not considered to compromise the quality of data because split replicates were undertaken during sampling and testing for the SD Zone and the RPDs were found to be within the acceptable limit, and all other DQIs (except trip and rinsate blanks) are acceptable.

#### 4.2 Trip and Rinsate Blanks

No trip or rinsate blanks were collected or analysed during this investigation. The absence of trip blanks is not considered to compromise the quality of data because volatile contaminants, which are most likely to cause cross contamination in transit, were not part of the contaminants of potential concern for which there was analysis. Equipment rinsate blanks were not collected because samples were retrieved by hand from the centre of the excavator bucket, with a new, disposable pair of nitrile gloves used to collect each sample. Accordingly, the possibility of cross-contamination between sampling locations was minimised as far as practicable.

### 5. LABORATORY QUALITY ASSURANCE / QUALITY CONTROL

Quality Control (QC) of the laboratory program was measured by the following means:

- method blanks – the laboratory ran reagent blanks to confirm the equipment and standards used were uncontaminated;
- laboratory duplicates – the laboratory split samples internally and conducted tests on separate extracts; and
- laboratory spikes – samples were spiked by the laboratory with a known concentration of contaminants and subsequently tested for recovery.

#### 5.1 Method Blanks

All method blanks from Envirolab returned results below the laboratory reporting limit and are therefore acceptable.

## 5.2 Laboratory Duplicates

The RPD between duplicate pairs is calculated to measure laboratory precision.

Envirolab laboratory RPDs typically ranged from 0% to 15% and were within acceptable ranges. Several heavy metal RPDs were above 15%, varying from 17% to 29% and 40% but the difference in the actual contaminant concentrations was only in the order of 1 mg/kg to 3 mg/kg, so they were also considered acceptable.

## 5.3 Laboratory Spikes

Envirolab adopts an acceptable range of 70% to 130% for recovery of inorganics and metals, and 50% to 140% for organics.

Envirolab laboratory spike results ranged from 70% to 128% and were within Envirolab acceptable ranges.

## 6. QA / QC CONCLUSIONS

Overall the accuracy and precision of the soil testing procedures, as inferred by the QA / QC data, is considered by DP to be of sufficient standard to enable the data, as reported by the NATA accredited laboratories, Envirolab and ALS, to be used by DP for interpretation of site contamination conditions.

DP acknowledges that the frequency of split replicates, and trip blanks and equipment rinsate blanks did not conform with the QC requirements outlined in AS4482.1-2005 and that these QC samples should have been collected at the frequency outlined in DP's RAP, dated 16 May 2016. However, given that the blind replicate analysis from this testing and the blind and split replicate analysis for the SD Zone (and a large proportion of all the other primary soil results) were below the laboratory LOR or had acceptable RPD values, it is considered that the overall results are not affected. In particular, with contaminant concentrations generally below the laboratory LOR, the possibility of cross contamination of samples either during sampling or in transport is considered negligible.

**Appendix F** - Report on Remediation and Validation  
Assessment Multiple Dwelling (MD) Zone Proposed  
Residential Subdivision Lot 3 Freds Pass Road, Humpty  
Doo, NT. Dec 2016 (DP Ref: 78156.02.R.004)



**Douglas Partners**  
Geotechnics | Environment | Groundwater

Report on  
Remediation and Validation Assessment

Single Dwelling (SD) Zone  
Proposed Residential Subdivision  
Lot 3 Freds Pass Road, Humpty Doo, NT

Prepared for  
Mr Peter Poniris

Project: 78156.02  
24 October 2016

Integrated Practical Solutions





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## Document History

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author		24 October 2016
Reviewer		24 October 2016



Douglas Partners Pty Ltd  
ABN 75 053 980 117  
www.douglaspartners.com.au  
Unit 2, 14 Caryota Court  
Coconut Grove NT 0810  
PO Box 36858  
Winnellie NT 0821  
Phone (08) 8948 6800  
Fax (08) 8948 6899

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## Report on Remediation and Validation Assessment

### Single Dwelling (SD) Zone of Proposed Residential Subdivision

### Lot 3 Freds Pass Road, Humpty Doo, NT

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#### 1. Introduction

This report by Douglas Partners Pty Ltd (DP) presents the findings of validation works related to the site remediation of the Single Dwelling (SD) Zone of the proposed residential subdivision at Lot 3 Freds Pass Road, Humpty Doo ('the site'). The site also has an area designated for development of multiple dwellings, which will be remediated and validated in a similar manner to the SD Zone. The results of the remediation and validation of the Multiple Dwelling (MD) Zone will be reported separately. The SD and MD Zones are shown on Drawing 1 in Appendix A.

The work was commissioned in a services order dated 30 August 2016 from Mr Peter Poniris ('the client') and was undertaken in accordance with DP's proposal DWN160153, dated 23 August 2016.

DP had previously completed a preliminary site investigation (PSI, Ref 1) and detailed site investigation (DSI, Ref 2) between April and December 2015. The results of the DSI indicated that concentrations of organochlorine pesticides (OCP) were detected above the adopted assessment criteria at a number of locations across the site. Subsequently, a remediation action plan (RAP, Ref 3) was prepared by DP. The RAP proposed remediation strategies and methodologies required to restore the beneficial uses of land for the proposed residential development. The RAP covers a number of remediation strategies, designed to be applied to different areas of the site, depending on the degree, nature and extent of contaminants encountered

The site is the subject to an environmental audit by Mr John Throssell of GHD Pty Ltd (GHD), and all works by DP associated with investigation and remediation of the site have been reviewed by the Auditor as part of the audit process. Prior to commencement of remedial works, the PSI, DSI and proposed strategies and methodologies of the RAP were generally accepted by the Auditor as being satisfactory.

The purpose of this current work is to ensure remediation of the site was carried out in accordance with the RAP, and to validate the results of the remediation, by sampling and testing across the site. This report presents details of the remediation work and the findings of the validation testing. Specifically, this report presents:

- A summary of previous work and findings;
- Results of an intrusive groundwater investigation carried out during remediation works;
- Methods adopted for the following remediation and validation work in the SD Zone, and if / how the methods deviated from the RAP:
  - vertical delineation of OCPs at select locations;
  - removal and validation of previously identified OCP hotspots;
  - vertical mixing of near surface soils in the whole SD Zone, excluding hotspots and some minor areas where laterite was present at the surface;

- validation testing of the mixed soil horizon;
- testing of any soils intended to be removed from site; and
- testing of imported soil proposed for use as filling to hotspot excavations.
- Results of site observations and laboratory testing;
- Remediation/validation criteria and comparison of test results against these criteria;
- Quality analysis and quality control procedures and results;
- A discussion of the results and recommendations for any further works; and
- Our conclusions relating to the overall results of remediation and validation works and the suitability of the site for its intended development.

It should be noted that, at the time of preparing this report, the site capping layer, as proposed in Section 5.3 of the RAP had not been completed. It is intended that the capping layer be completed as part of bulk earthworks at the site and this report was required to enable bulk earthworks to commence. Additional remediation works, as described in the RAP, are also required within the Multi Dwelling (MD) Zone and will be reported under separate cover when completed.

This report should be read in conjunction with DP's notes About this Report, which are presented in Appendix A.

## **2. Summary of the Findings of Previous Work**

### **2.1 Preliminary Site Investigation**

DP was initially engaged to undertake a PSI for the entire site (SD and MD zones). The final results of this PSI are presented in our report dated April 2015 (Ref 2). In summary, the PSI identified that:

- The site had been used for agriculture (banana and tomato crops, then a mango orchard) from circa 1970 and prior to this was likely to have been unallocated crown land covered in native vegetation;
- Pesticides and insecticides were thought to have been used at the site up until circa 1999 and disposal practices may not have been in accordance with the manufactures instructions;
- The mango orchard ceased operation in circa 2012;
- An elevated residential dwelling containing asbestos construction materials had been present on the MD Zone of the site;
- All trees (including roots) and structures were removed and the site surface was partially stripped between 2012 and 2015. This included removal of the asbestos-containing residential dwelling by a licensed asbestos removalist;
- The remnants of a septic system, associated with the dwelling, were still present at the site during the PSI;
- It was determined that the potential for contamination at the site was low to moderate and the site may be potentially contaminated with pesticides, herbicides, insecticides, petroleum hydrocarbons and / or asbestos; and

- Intrusive sampling and testing was needed in order to confirm the site contamination status.

Information provided by the site owner, after the completion of the PSI, indicated that organochlorine pesticides were applied to the soil at each location where a mango seedling was planted. Before the seedling was planted, the hole into which it was to be placed was sprayed with dieldrin solution to prevent termite attack on the roots of the immature tree.

## 2.2 Detailed Site Investigation

Based on the results of the PSI, DP was engaged to undertake a DSI for the entire site (SD and MD zones). The final results of this DSI are presented in our report dated December 2015 (Ref 3). A summary of these results is given below:

- In addition to the site conditions identified in the PSI, a review of NT Government groundwater resources indicated that shallow groundwater is unlikely at the site and regional groundwater is likely to be at depths greater than about 50 m;
- Intrusive sampling comprised test pits in SD and MD Zones, and was followed by chemical laboratory testing of soils. 'Background' sampling off-site to confirm the absence of widespread contamination of the local area was also carried out.
- Grid (across the majority of the site) and targeted (near the previous residential dwelling) sampling was undertaken.
- 21 test pits (TP01 to TP21) were excavated for SD Zone (6.1 ha), 12 test pits (TP22 to TP28, TP30 to TP34) were excavated for MD Zone (2 ha), and one test pit (TP29) and two surface samples (S1 and S2) were excavated off-site for the assessment of background conditions.
- The number of test pits represented about 30% of the recommended number for the assessment of site conditions as outlined in AS-4482 (Ref 10), but it is a statistically significant number of sampling locations.
- The conditions observed during intrusive work indicated the general absence of gross contamination to soils at the locations and depths tested (*i.e.* absence of visual or olfactory indicators of contamination).
- Laboratory testing indicated organochlorine pesticides (OCPs) in 10 of 31 primary soils tested in the SD Zone and 12 of 18 primary soils tested in MD Zone, which confirmed the presence of pesticide impacts to soils, which is likely to be due to former chemical application at the site.
- With the exception of one sample in TP05, OPPs were not detected at concentrations above laboratory detection limits. In TP05 chlorpyrifos was present at a concentration of 41.0 mg/kg.
- Comparison of test results with investigation criteria indicates:
  - the concentrations of OCPs, OPPs, TRH and phenoxy herbicides were less than adopted ecological investigation criteria, with the exception of OCPs in the north-western part of the site (TP25, TP26 and TP27);
  - concentrations of OCPs were generally within the human health investigation levels for residential land use in the SD Zone, with the exception of samples that contained elevated dieldrin concentrations at TP01, TP07, TP10, TP17, TP18, TP20 and TP21. Of these, two samples exceeded 250% of the criteria (TP01 and TP20).

- concentrations of OCPs were generally within the human health investigation levels for residential land use in the MD Zone, with the exception of samples that had exceedances of aldrin and dieldrin and / or heptachlor in TP26, TP27, TP27, TP28 and TP30. Of these, four samples exceeded 250% of the criteria for aldrin and dieldrin (TP26, TP27, TP28 and TP30), and two exceeded for 2x Heptachlor Epoxide and Heptachlor TEQ (TP26 and TP27).
- Statistical analyses of concentration data for both the SD and MD Zones indicated 95% UCL concentrations remained above site assessment criteria, with and without consideration of hot spots;
- Elevated OCP concentrations were typically identified in surface and near-surface soils and OCP concentrations were generally higher for the MD Zone.
- Vertical delineation of OCPs was not achieved at six test pit locations across the whole site area (SD and MD Zone);
- Distribution of contamination across the site is considered to be representative of broad acre application;
- Hotspots were assigned based on NEPC guidance for contamination exceeding 250% of the assessment criteria.
- Asbestos fibres were identified in soil at TP28, located in the vicinity of former site structures in the MD Zone, therefore gross asbestos impact at the site was considered unlikely;
- Suggested remediation options considered suitable to render the site suitable for the proposed development included:
  - Removal of identified hotspots (TP01, TP20, TP26, TP27, TP28 and TP30);
  - On-site management beneath a fill capping layer;
  - On-site management via vertical soil mixing of the upper profile;
  - A combination of off-site disposal and on-site management.
- Further investigation work to delineate vertical extent at some locations and to validate the septic system excavation post removal of the septic system was also recommended, but it was acknowledged that this could be done in conjunction with the remediation work;
- In regards to groundwater, it was considered that due to the low mobility of OCP/OPP contaminants and the site activities, the potential for contamination to groundwater was low. Therefore assessment of groundwater was not considered warranted for the DSI.

A drawing showing the distribution and contaminant concentrations for identified human health criteria exceedances, including “hot spots”, was prepared for the DSI. This drawing has been reproduced for this report, validation samples have been added, and it is presented as Drawing 1 in Appendix A.

### 2.3 Remediation Action Plan (RAP)

On the basis of the findings of the DSI, a Remediation Action Plan (RAP) was developed by DP for the site. The RAP is presented in our report dated May 2016 (Ref 4) and in broad general terms the recommended remediation strategy comprised:

- Removal of OCP Hotspots at TP01, TP20 in the SD Zone and TP26, TP27, TP28 and TP30 in the MD Zone by removing soil to a depth of between 0.4 m to 0.5 m below the depth of impacted soil, over a 5 m by 5 m square area;
- Vertical delineation of OCP-impacted soil at TP01, TP10, TP17, TP18 and TP20 in the SD Zone, and TP27 in the MD Zone;
- Vertical mixing of the upper soil profile to a depth of between 0.3 m and 0.5 m over the entire site area (SD and MD Zones), with the purpose of taking clean soils from depth and mixing them with the shallow, impacted soils.
- Removal of asbestos-impacted soil at TP28 in the MD Zone by removing soil to a depth of 0.3 m over a 5 m by 5 m square area, prior to removing OCP-impacted soil at the same location;
- Removal of the septic system, associated fixtures and any soils impacted by the septic system in the MD Zone.
- Finally, after all other remediation strategies are complete placement of a capping layer over the vertically mixed soils. It should be noted that at the time of reporting this capping was intended to be placed as part of bulk earthworks, which was yet to commence.

Full details on the methods used to implement each remediation strategy given above are presented in the RAP. Any deviations from these methods are discussed in Section 4 of this report.

Validation sampling typically involved recovery of soil samples from excavation faces or from the site surface, after completion of remediation works. As noted above, the proposed validation sampling for each stage of remediation was presented in detail in the RAP, and actual validation sampling carried out during the works is presented in Section 4 of this report.

The RAP also provided information on remediation criteria for the validation samples (ie Health Investigation Levels, Ecologically Based Investigation Levels, Waste Soil Categorisation and Asbestos). The assessment criteria is summarised in Section 2.4.

Finally, the RAP provided detailed information on soil sampling methods, waste categorisation, stockpile management, unexpected finds protocols for contamination by OCP or asbestos, and validation reporting. It also included an environmental management plan for the remediation works at the site.

### 2.4 Adopted Remediation Criteria

As detailed in the RAP, the analytical results were assessed against investigation levels outlined in Schedule B1 of the NEPM (See Ref 9) for a low density residential development, which is the land use proposed at the site.

Health Investigation Levels (HILs) have been adopted as they are intentionally conservative and the results have been compared to HIL A criteria, which is applicable for residential land use with garden / accessible soil. DP considers this the most relevant end use for this site at this time.

The applicability of Ecological Investigation Levels (EILs) was considered in the RAP, but the implications of exceedances of those criteria were deemed to outweigh the possible associated risks.

The adopted HIL and EIL criteria are presented in Table 1 of the RAP (Ref 4) and are reproduced on the tabulated results tables in Appendix C for ease of comparison.

It should be noted that the validation testing of soil, following vertical mixing operations, was only concerned with OCPs.

Actions required for any exceedances of analytical test results compared against HILs and EILs are given in the RAP (Ref 4).

## **2.5 Waste Soil Categorisation Criteria (for Off-site Disposal)**

Any soils to be removed from site will be classified as 'waste material' in accordance with the current EPA Victoria guidelines outlined in Publication IWRG621 (See Ref 6), which presents the current categorisation criteria used to assess soil prior to off-site disposal. The EPA Victoria guidance for waste categorisation is adopted in the Northern Territory.

Under these guidelines, any soils to be removed off-site will be classified into one of four categories based on its relative hazard. From least to most contaminated, these categories are:

- Fill Material (not contaminated);
- Category C Contaminated Soil (least contaminated);
- Category B Contaminated Soil; and
- Category A Contaminated Soil (most contaminated).

Off-site disposal must be carried out by the methods given in the IWRG621 guideline, depending upon the classification into which the 'waste material'.

The criteria for waste soil categorisation are specified in Table 2 of IWRG621 (Ref 6). They are also reproduced on the tabulated results tables in Appendix C for ease of comparison.

## **2.6 Asbestos**

As per details presented in the RAP, the remediation and validation of asbestos in soil were to be conducted in general accordance with the WA Department of Health Guidelines (See Ref 11).

### 3. Intrusive Groundwater Investigation

As discussed in the DSI, and summarised in Section 2.2 of this report, shallow groundwater at the site was considered unlikely and, due to the low mobility of OCP/OPP contaminants, the potential for groundwater contamination was considered low.

Even so, a limited groundwater intrusive investigation was carried out for the site during the remediation works on the SD Zone. The scope for the groundwater investigation comprised drilling a single borehole to a depth of 5.5 m below the ground surface level. The borehole was positioned adjacent to a contaminant hotspot (TP28) on the MD Zone of the site, and it was drilled using a 150 mm diameter auger. Even though the borehole was not on the SD Zone, the subject of this report, it is discussed herein as it does give an indication of groundwater conditions over the whole site.

Detailed logs and a description of the ground conditions encountered in the borehole will be presented in the remediation and validation report for the MD Zone of the site. However, a summary is given below.

The conditions encountered in the borehole were similar to those encountered in the test pits, and comprised a thin surficial layer of gravelly silty sand, overlying cemented laterite soils from about 0.3 m. The laterite soils continued and became less cemented with depth then transitioned to weak weathered rock, probably siltstone, that was recovered as 'soil' during drilling. Detailed logging of the rock was not possible due to the method of drilling adopted.

No groundwater was encountered during drilling and neither was moist or saturated soil conditions. Even so, a groundwater piezometer was installed to the full depth of the borehole. The piezometer was checked on several occasions between the installation date (16 September 2016) and the date of this report, however no groundwater was encountered.

It is however noted that groundwater levels will fluctuate with time, particularly between wet and dry seasons, and the groundwater level at the site could rise and be encountered with the depth of investigation.

Further details of the groundwater investigation are presented in the report for the MD Zone but it is not discussed further herein.

### 4. Remediation and Validation Work

#### 4.1 Remediation Work Methods

##### 4.1.1 General

The remediation and validation works for the SD Zone were carried out between the 31 August and 3 October 2016. The works were in general accordance with the auditor-endorsed RAP and the methods adopted are presented below. Where applicable, any deviations from the RAP are highlighted and discussed.

It should be noted that although the MD Zone has been discussed in the preceding sections while summarising the previous reports, henceforth this report is only concerned with the SD Zone of the site. The results of remediation and validation for the MD Zone will be reported separately.

A site layout plan showing both the SD and MD Zones, DSI test pit locations, and sample locations for hotspots and vertical delineation pits, is presented as Drawing 1 in Appendix A. Drawing 2, also in Appendix A, shows the surface validation sample locations recovered after completion of vertical mixing.

Logging of excavations for OCP hotspots (see Section 4.1.2) and vertical delineation (see Section 4.1.3) was carried out by an experienced environmental scientist or senior geotechnical engineer. The detailed logs are presented in Appendix B.

### 4.1.2 OCP Hotspots

For OCP Hotspots:

- The previous test pits of concern (TP01 and TP20) were located using previously reported coordinates and a hand held Garmin GPS device (position accuracy of about 5 m), and by visual inspection of any disturbed surface soil;
- Soil was then excavated over an approximate 5 m by 5 m area, to a maximum depth of 1.8 m, using a 12 tonne excavator. The area excavated was centred as close as practical to the location of TP01 and TP20;
- The excavated soil was temporarily stockpiled close to the west boundary of the MD Zone of the site, awaiting waste categorisation for disposal off site (Refer to Section 4.3 for classification);
- The stockpiles were placed directly on the ground surface with no barrier between the stockpile and underlying soils. This was considered acceptable because the underlying soils were yet to be remediated by stripping of topsoil and vertical mixing, and the principal contaminant of concern (dieldrin) has a low mobility;
- Validation samples were collected (HSR series) from the base (designated B) and mid-section (designated S1 to S4) of the walls of the hotspot excavations; and
- Validation samples for waste categorisation were collected from the stockpiled material excavated from TP01 and TP20 (HSR series, designated SP1 and SP2) before it was moved to the MD Zone. Samples were collected systematically in the stockpile at variable locations and depths, as shown on the stockpile sketches following the logs of TP01 and TP20 in Appendix B.

### 4.1.3 Vertical Delineation

For vertical delineation of OCP-impacted soil:

- The test pits of concern (TP10, TP17 and TP18) were located using previously reported coordinates and a hand held Garmin GPS device (position accuracy of about 5 m), and by visual inspection of any disturbed surface soil;
- New test pits were then excavated as close as practical to TP10, TP17 and TP18 to a maximum depth of 1.1 m, using a 12 tonne excavator and 600 mm wide rock tooth bucket;

- Disturbed soil samples (VD series) were collected from depths of 0.1 m, 0.25 m, 0.5 m and 1.0 m in TP10, TP17 and TP18. Samples were collected from the centre of the excavator bucket;
- Once sampling was complete, the test pits were backfilled with the excavated spoil and lightly compacted using the excavator bucket.

It should be noted that new test pits were not excavated near TP01 and TP20, which were also identified as requiring vertical delineation during preparation of the RAP, because it was considered that the hotspot removal at these locations (see Section 4.1.2) would make vertical delineation irrelevant.

#### 4.1.4 Vertical Mixing

The process adopted on site for vertical mixing of near surface soils was substantially different from the method described in the RAP. The method was revised to account for topsoil stripping, which wasn't included in the RAP, and to suit the plant that the earthworks contractor had readily available (ie excavators and graders). The revised method comprised:

- Stripping of all remaining grass and vegetation, and topsoil or other soils containing vegetation or organic material from the SD Zone, up to a maximum depth of about 50 mm. The stripped vegetation and soils were temporarily stockpiled on the MD Zone of the site, near the northern site boundary where they awaited waste categorisation for disposal off site (Refer to Section 4.3 for classification). The stockpiles were placed directly on the ground surface with no barrier between the stockpile and underlying soils. This was considered acceptable because the underlying soils were yet to be remediated by stripping of topsoil and vertical mixing, and the principal contaminants of concern (dieldrin) has a low mobility;
- Ripping exposed near surface soils using a Caterpillar 12G Grader with a five tyne ripper, that ripped most of the SD Zone to depths of between 0.3 m (hard ripping) and 0.5 m (easy ripping). In some minor areas, heavily cemented laterite soils at the site surface prevented ripping. These areas were generally left untreated and validated by surface sampling (see Section 5);
- Using the grader blade to turn over tyned soils, bringing clean soils at depth to the surface and mixing them with shallow OCP-impacted soils, which was the overall aim of the vertical mixing method described in the RAP;
- The ripping and blade mixing was carried out in long traverses that were generally parallel to one of the site boundaries, those being the northeast, east, south and west boundaries. The traverses typically started adjacent to the boundary and worked towards the centre of the site. Each traverse was between 150 m and 280 m long depending upon which boundary was being followed. Each successive traverse had a minor overlap of the previous one. Inevitably, as the traverses approached the centre of the site and the intersection of boundaries, there was some crossover of traverses and mixing in two directions.
- Once vertical mixing was completed to the satisfaction of the supervising personnel from DP, validation surface samples (designated VMS1 to VMS32) were collected across the site using grid-based locations (approximate 50 m spacings); and
- Waste categorisation sampling of the stockpile arising from topsoil stripping was also carried out. Samples (designated TSSPS1 to TSSPS17) were collected systematically throughout the stockpile at varying locations and depths, as shown on the sketch presented in Appendix B. the samples were collected after the material was stockpiled on the MD Zone.

DP personnel attended site periodically during stripping and mixing operations to witness site activities, give direction to the earthworks contractor as required, and to collect the validation samples.

Topsoil stripping was required prior to vertical mixing to meet engineering earthworks requirements. Mixing of topsoil and vegetation into the underlying soils would have resulted in a layer of soil unsuitable for engineering purposes, and which would have to be removed at the commencement of bulk earthworks.

Before commencing vertical mixing over the whole remediation area with the revised method, DP supervised a small trial area (about 10 m by 40 m) to determine if the proposed method was suitable. During completion of the mixing trial, and while supervising mixing activities, DP concluded that orthogonal ripping, as presented in the RAP, would not significantly improve the mixing achieved by blade mixing. Hence, orthogonal ripping was discontinued.

During mixing works, a water cart was used, as required, to wet the surface soils to aid mixing operations and to minimise dust at the site. Periodic rainfall occurred during mixing, which meant only minimal use of the water cart was required.

The SD Zone was ripped and blade-graded in stages to allow validation and re-compaction works (see below) to continue without delay. Each stage was essentially parallel to and the full length of a site boundary; approximately 150 m to 280 m in length, and approximately 50 m to 60 m wide. Ripping of each stage involved a minimum of two passes of the five tyne ripper. If hard ground was encountered additional passes (up to six) were carried out. The number of passes required in each stage was directed on site by the supervising personnel from DP, and was based on how well the soils had been ripped, which determined how well the soils would subsequently be turned over by the grader blade.

After validation sampling was complete, the site surface was graded flat, then compacted using several passes of a pad foot roller. A final pass was undertaken using a flat drum roller to seal the site surface so that any rainfall would more effectively run off the site, and not pool in areas and create muddy conditions.

#### **4.1.5 Asbestos and Septic-Impacted Soils**

Asbestos-impacted soils were only encountered at TP28 on the MD Zone of the site during the previous work. Similarly, soils associated with the septic system were only expected on the MD Zone of the site. Therefore, both of these were not treated as part of this work on the SD Zone and are not discussed in this report. Treatment methods for the asbestos-impacted soils in the MD Zone and the soils around the septic system will be detailed in a separate report.

#### **4.1.6 Capping Layer**

As discussed previously, the capping layer will be placed as part of bulk earthworks, which is yet to commence.

## 4.2 Validation Sampling (Including Stockpile Sampling)

All validation soil sampling was performed in general accordance with standard operating procedures outlined in DP's Field Procedures Manual, and as shown in Section 6.1 of the RAP. Specifically it involved:

- Transferring by hand soil samples from; excavation faces: the excavator bucket; or from the soil surface, into laboratory-prepared glass jars, using a new pair of disposable nitrile gloves for each sample;
- Immediately capping glass jars, then labelling each with individual and unique identification details, including project number, sample number with relevant test pit if applicable, sampling date, and the person responsible for sampling;
- Placing the glass jars into a cooled, insulated and sealed container for transport to the testing laboratory; and
- Preparing chain of custody (COC) documentation and ensuring that the document was endorsed by the laboratory, acknowledging receipt, when returned to DP.

All samples that required testing were submitted to the testing laboratory. Samples not analysed were stored at DP's Darwin laboratory for future analyses, as and when required.

## 4.3 Site Supervision

The remedial works on site were carried out in general accordance with the RAP prepared by DP and the works were supervised by appropriately-experienced staff from DP. Specifically, DPs supervising role on the site involved:

- Full-time supervision during excavation of hotspots at TP01 and TP20 and during placement of excavated material in stockpiles;
- Full-time supervision during excavation and backfilling of Test Pits TP10, TP17 and TP18 for vertical delineation of OCPs;
- Periodic (part-time) supervision of topsoil stripping activities, including formation of topsoil stockpiles;
- Full-time supervision of the initial trial mix area to observe if ripping and blade-mixing using the grader would achieve adequate results; and
- Periodic (part-time) supervision of ripping and mixing across the whole SD Zone once it was established that the trial mix methods were adequate and once the method was agreed between the contractor, client and DP.

For part-time supervision, DP staff were on site during the early stages of work and remained on site until work methods were established and agreed with the contractor and client. Once the work methods were established, DP carried out periodic inspections only, either daily or every second day. These latter inspections only involved 1 to 2 hours on site.

The full-time and part-time supervision on site was carried out by either an experienced environmental scientist, senior geotechnical engineer or by a soil technician that acted under the direction of the

former personnel. Where required, advice on site works was also sought from a DP principal environment scientist.

Aside from confirming that works were proceeding in accordance with the RAP, the supervising personnel were responsible for confirming when topsoil was adequately stripped and the underlying soils were adequately ripped so that vertical mixing could commence. They were also responsible for confirming when the soils were adequately mixed and validation sampling could commence.

Validation sampling of OCP hotspots and for vertical delineation of OCPs, and validation sampling after vertical mixing was complete, was carried out by the supervising personnel during the various site visits. Waste categorisation sampling of topsoil and OCP hotspot stockpiles was carried out by the same supervising personnel during their various site visits.

Site activities observed during each visit were recorded by the supervising personnel and were retained on DPs project files.

All logging of excavations on site (ie test pits and hotspots) was carried out by the experienced environmental scientist or senior geotechnical engineer.

## **5. Results of Validation Work**

### **5.1 Site Conditions**

The subsurface conditions encountered in the test pits for vertical delineation, in the hotspot excavations, and during stripping and mixing of site soils were generally consistent with the previous findings of the PSI and DSI. These conditions typically comprised natural silty sand, grading to clayey sand or clayey sandy gravel at depth, with some cemented zones. The conditions are consistent with typical laterite profiles in the Darwin and surrounding area.

Detailed logs of the test pits and hotspot excavations, showing soil descriptions, sample details and excavation photographs are provided in Appendix B, and should be read with the accompanying notes, also in Appendix B.

Prior to commencement of vertical mixing, topsoil was stripped from the SD Zone using the grader, as noted above. Topsoil was shaped into windrows and then moved and stockpiled on the MD Zone using an excavator and side tipping truck. The stockpiled material was still present on the MD Zone at the time of reporting, awaiting waste categorisation so that it could be disposed of, appropriately, off site.

The topsoil horizon was typically quite thin (about 20 mm to 50 mm) and at some locations it was not present at all. It generally comprised silty / clayey sand with thick grass rootlets. No large roots were evident.

Tying of the soils with the grader generally achieved a ripped depth of between 0.2 m and 0.5 m, depending upon the depth of rippable soil. In some areas, heavily cemented laterite soils at the site surface prevented mixing as they could not be ripped and turned over. In these areas, the cemented

laterite was left *in situ* and a surface sample was collected from the laterite in order to validate that area of the site. Such areas were estimated to comprise less than 2% of the SD Zone.

Mixing with the grader blade typically turned over soils to a depth of between about 0.3 m and 0.5 m. The extent of mixing was easily evident from the variation in soil colour in areas that had been worked, as the deeper soils (typically orange brown in colour) were brought to the surface, displacing the darker surface soils (typically dark brown to brown in colour).

A selection of site photographs, showing topsoil stripping, vertical mixing operations and general conditions encountered during the site inspections are presented in Appendix B.

Drawing 1 and 2 in Appendix A, show the site layout and sample locations (VD, HSR and VM samples).

## 5.2 Laboratory Analysis

Each sample collected during field work was sent for analysis at Envirolab Group (Envirolab), which is accredited by the National Association of Testing Authorities (NATA) for the tests performed.

The analytical testing was selected to target contaminants of potential concern (CoPC) as identified from the PSI and DSI, and it comprised the following:

- a total of twelve samples from the three vertical delineation test pits (VD series), tested for OCPs and organophosphate pesticides (OPPs);
- a total of ten validation samples from the two hotspot excavations (HSR series), tested for OCPs;
- a total of four samples from the two hotspot excavation stockpiles (HSR series, designated SP), tested for a broader analytical suite as follows:
  - o two of four samples – EPA Publication IWRG 621 Table 3 Clean Fill Screen comprising metals / metalloids (arsenic, cadmium, chromium (VI) copper, lead, mercury, molybdenum, nickel, selenium, silver and zinc), total cyanide, total fluoride, speciated phenols (halogenated plus non-halogenated), benzene, toluene, ethyl benzene, total xylenes (BTEX), total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), chlorinated hydrocarbons (volatile plus semi-volatile);
  - o all four samples – OCP/OPP; and
  - o two of four samples – asbestos identification.
- a total of thirty two surface samples recovered after completion of vertical mixing (VM series), tested for OCP/OPP;
- a total of seventeen samples recovered from the topsoil stockpiles after topsoil stripping (TSSP series), tested as follows:
  - o three samples – EPA Publication IWRG 621 Table 3 Clean Fill Screen (see above); and
  - o all samples – OCP/OPP.
- a total of four samples recovered from imported fill material (FILL series, designated SP), that was being used to backfill hotspot excavations, tested in accordance with the EPA Publication IWRG 621 Table 3 Clean Fill Screen (see above).

Nine field duplicate / replicate samples collected were analysed for OCP/OPP for QC purposes.

From the duplicate / replicate samples, two split replicates were collected and tested at the NATA accredited laboratory, ALS.

### 5.3 Laboratory Results

Detailed laboratory test reports are presented in Appendix C, along with a summary of the results, shown on Tables C1 and C2.

Results are discussed in the following sections for each stage of the remediation works.

#### 5.3.1 OCP Hotspots

All samples recovered and tested from the walls and base of the hotspot excavations at TP01 and TP20 recorded contaminant concentrations below the LOR and therefore below the adopted assessment and remediation criteria.

#### 5.3.2 Vertical Delineation

All of the samples tested from each depth interval (starting at 0.1 m) of each test pit (TP10, TP17 and TP18) during this current remediation work recorded contaminant concentrations below laboratory limits of reporting (LOR) for OCPs, which was 0.01mg/kg. Therefore, they were also below the adopted assessment and remediation criteria.

Test results during the DSI indicated that, in the SD Zone, dieldrin was typically recorded in samples recovered from the surface or at depths of 0.1 m but, generally, not deeper in the soil profile. Where it was encountered at the surface or at shallow depth and another deeper sample was tested, the recorded concentration of dieldrin for the deeper sample was typically below the LOR (0.5 mg/kg during the DSI).

By considering all test results from this current work and from the DSI, it is reasonable to conclude that prior to remediation works being undertaken, dieldrin contamination was present in the near surface soils of the SD Zone, to a maximum depth of 0.3 m. In most instances, the test results actually indicated that contamination only extended to depths of less than 0.1 m. Based on this and by using the formula from the NSW EPA Mixing Guidelines (Ref 12) as shown in the RAP, it is considered reasonable to adopt depths of 0.1 m and 0.3 m as the maximum depths of site contamination in the SD Zone when determining the depth of vertical mixing required for site remediation. The depth required is discussed further in the following section.

#### 5.3.3 Vertical Mixing Validation Testing

By adopting relatively conservative parameters for the SD Zone (*ie* dieldrin concentration of 10 mg/kg and a maximum depth of contamination of 0.3 m) a vertical mix depth of about 0.5 m was estimated using the methods in Section 5.2.3 of the RAP. This mix depth could be taken as the 'maximum' mix depth required because the adopted dieldrin concentration of 10 mg/kg is above the average

concentration recorded in the DSI, after removal of hotspots, and the maximum depth of contamination of 0.3 m is conservative when compared to vertical delineation results.

The actual mix depths observed on site during remediation works for the SD Zone were typically about 0.3 m to 0.5 m, which is considered adequate for the concentrations of dieldrin encountered and the depth of contamination measured at the site. However, as noted in Section 5.1, in some areas heavily cemented laterite soils at the surface prevented ripping and mixing, and in these areas, the cemented laterite was left *in situ* and a surface sample was collected to validate the area. These heavily cemented laterite soils at the site surface were estimated to comprise less than 2% of the SD Zone.

For the purpose of validating the mixing process 32 surface samples plus eight replicates were collected across the SD Zone after mixing was complete, and tested for OCPs and OPPs. Of the samples tested, twenty six recorded OCP and OPP concentrations below the LOR of 0.01mg/kg. The other six recorded dieldrin, only, at concentrations of between 0.01 mg/kg and 0.25 mg/kg. Four of the replicate samples also recorded dieldrin, but at concentrations between 0.01 mg/kg and 0.05 mg/kg. OCP concentrations for the other four replicate samples were below the LOR. Of all the validation samples that recorded dieldrin concentrations above the LOR, no concentrations were above the adopted assessment and remediation criteria of 6 mg/kg (HIL A) and 0.35 mg/kg (EIL).

### 5.3.4 Waste Categorisation

Approximately 80 m<sup>3</sup> (no bulking factor) of material was excavated from the combined hotspots at TP01 and TP20 and stockpiled temporarily on the MD Zone. During the excavation and subsequent moving, the material was inadvertently mixed. Four samples were recovered from the stockpiles, before they were moved to the MD Zone, and each sample was tested. All samples recorded contaminant concentrations either below the LOR or below the EPA IWRG 621 Guidelines for 'Fill Material'. Based on this, the material excavated from the hotspots could be considered as *Clean Fill Material* and there are no restrictions on where it can be disposed of, with the provision that it does not have any off-site impact on surface or groundwater.

Similarly, about 1,200 to 2,000 m<sup>3</sup> of topsoil was stripped from the SD Zone and stockpiled separately on the MD Zone. Stripping was carried out using a grader and stockpiling was achieved with an excavator and side-tipping truck. During this process the topsoil was substantially turned, mixed and aerated. After it was stockpiled, seventeen samples were recovered from the stockpiles and tested. Twelve of the samples tested recorded concentrations of dieldrin that were between 0.01 mg/kg and 0.06 mg/kg, averaging 0.02 mg/kg. All other samples recorded contaminant concentrations below the LOR. All samples recorded contaminant concentrations below the EPA IWRG 621 Guideline of 1 mg/kg (total OCPs) for 'Fill Material'. Based on this, the topsoil could be considered as *Clean Fill Material*, and there are no restrictions on where it can be disposed of, provided it does not have any off-site impact on surface or groundwater.

### 5.3.5 Imported Fill Material

Enough fill material was imported on to the site to backfill the hotspot excavations at TP01 and TP20 (ie about 80 m<sup>3</sup> unbulked or 100 m<sup>3</sup> with a 25% bulking factor applied). Four samples were recovered at random from the imported material and tested. All samples recorded contaminant concentrations either below the LOR or below the EPA IWRG 621 Guidelines for 'Fill Material'. Based on this, the imported material can be considered suitable for use in backfilling operations.

## 5.4 Quality Assurance and Quality Control (QA/QC)

A detailed discussion of the QA/QC information and data is presented in Appendix D.

Overall the accuracy and precision of the soil testing procedures, as inferred by the QA/QC data, is considered by DP to be of sufficient standard to enable the data, as reported by the NATA accredited laboratory, Envirolab, to be used by DP for interpretation of site contamination conditions.

## 6. Conclusions and Recommendations

### 6.1 Vertical Delineation

Based on the results reported herein, it is considered that the vertical extent of OCP-impacted soil have been appropriately delineated in Test Pits TP10, TP17 and TP18. Delineating the vertical extent of OCP-impacted soil in TP01 and TP20 was not applicable given that these locations were hotspots which were remediated and validated (see Section 6.2). The vertical extent of OCP-impacted soil over the remainder of the SD Zone was appropriately delineated during the DSI.

### 6.2 OCP Hotspots

Based on the results of this remediation and validation work, it is considered that the hotspots previously located at TP01 and TP20 have been effectively remediated and validated, and the soil excavated from the hotspots can be categorised as *Clean Fill Material* in accordance with IWRG 621.

Given that high dieldrin concentrations were previously reported at the hotspot locations, it is recommended that the excavated soil be taken off-site. However, based on the most recent results, it can be treated as *Clean Fill Material* in accordance with IWRG 621 and there are no restrictions on where it can be disposed of, with the provision that it does not have any off-site impact on surface or groundwater.

It is noted that the previously high dieldrin concentration recorded at the hotspot was probably confined to the near surface soils (upper 0.1 m to 0.3 m) and during excavation and stockpiling the concentration has most likely been diluted by mixing.

The hotspot excavations at TP01 and TP20 were backfilled and compacted with imported soil that met the requirements of IWRG 621 Fill Material (refer to Section 5.3.5). The backfill was compacted in layers but at the time of reporting no density testing had been carried out in the filling. Density testing will be required if the backfill is to meet engineered fill requirements.

### 6.3 Vertical Mixing and Topsoil

Based on the results of this assessment, it is considered that the upper soils of the SD Zone have been effectively remediated and validated, and topsoil stripped from the SD Zone can be categorised as *Clean Fill Material* in accordance with IWRG 621.

Dieldrin concentrations up to 11.2 mg/kg were previously reported in the near surface soils of the SD Zone so therefore it is recommended that the stockpiled topsoil be taken off-site. However, based on the most recent results, it can be treated as *Clean Fill Material* in accordance with IWRG 621 and there are no restrictions on where it can be disposed of, with the proviso that it does not have any off-site impact on surface or groundwater.

As also discussed in Section 6.2, it is noted that the dieldrin concentrations recorded previously have probably been diluted by significant mixing of the topsoil during stripping and stockpiling.

It should also be noted that during the DSI, twenty locations were sampled and tested in the SD Zone. Of these, ten recorded dieldrin contamination and seven were above the HIL. Two of these were considered hotspots and have since been removed. Therefore, prior to topsoil removal only five locations in the SD Zone with recorded contamination above the HIL remained and the levels of contamination were only between 7.92 mg/kg and 11.2 mg/kg, averaging 9.4 mg/kg. It could therefore be considered that at the time of commencement of topsoil stripping, dieldrin contamination was not widespread across the SD Zone.

### 6.4 Capping Layer

The last stage of the RAP for the SD Zone involves placement of the capping layer. It is understood that this capping layer will be placed upon commencement of bulk earthworks. The bulk earthworks are considered site works rather than remediation works and with the current development approval it is understood that site works can't commence until remediation works are complete to the satisfaction of the NT EPA.

Given the results of this assessment, and the absence of significant contaminant concentrations across the SD Zone, as shown by the validation test results, it is the opinion of DP that there should be no reason why bulk earthworks and placement of the capping layer can't commence at the site.

It should however be noted that DP must be on site periodically during placement of the capping layer to witness site activities, so that validation of the final stage of remediation can be confirmed.

## 7. References

1. Douglas Partners Pty Ltd, April 2015, "Report on Preliminary Environmental Site Investigation, Revision 1, Lot 3 Freds Pass Road, Humpty Doo, NT (DP Ref: 78156.00, Rev 1).
2. Douglas Partners Pty Ltd, December 2015, "Report on Detailed Site Investigation, Lot 3 Fred Pass Road, Humpty Doo, NT (DP Ref: 78156.01.R.001.Rev2).
3. Douglas Partners Pty Ltd, May 2016, "Report on Remediation Action Plan, Proposed Residential Subdivision, Lot 3 Freds Pass Road, Humpty Doo (DP Ref: 78156.01.R.003.Rev0).
4. Dutch Soil Remediation Circular 2009.
5. Environment Protection Authority of Victoria (EPA), June 2009, "Soil Hazard Categorisation and Management" Publication IWRG621.
6. Environment Protection Authority of Victoria (EPA), June 2009 "Sampling and Analysis of Waters, Wastewaters, Soils and Wastes" Publication IWRG701.
7. Environment Protection Authority of Victoria (EPA), June 2009 "Soil Sampling" Publication IWRG702;
8. National Environment Protection Council (2013): "National Environmental Protection (*Assessment of Site Contamination*) Measure" (as amended 2013) [NEPM].
9. Standards Australia, 2005: "Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds", AS 4482.1-2005.
10. Western Australia (WA) Department of Health (DOH) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia – May 2009
11. Douglas Partners Pty Ltd: "Field Procedures Manual" and "Project Management Manual", which form part of the Company Quality System (accredited to AS/NZS ISO 9001:2000).
12. New South Wales Environment Protection Authority (NSW EPA), 2003 'Guidelines for the Vertical Mixing of Soil on Former Broad-Acre Agricultural Land'.

## 8. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for the SD Zone of the proposed residential subdivision at Lot 3 Freds Pass Road, Humpty Doo, in accordance with DP's proposal DWN160153, dated 23 August 2016, and the services order dated 30 August 2016 from Mr Peter Poniris. The work was carried out under DP's Conditions of Engagement. This report is provided exclusively for use on this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and / or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and / or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological

processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

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**Douglas Partners Pty Ltd**

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## **Appendix A**

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Notes About this Report

Drawing 1 – Test Pit, VD and HSR Sampling Locations – SD Zone

Drawing 2 – VM Sampling Location – SD Zone

# About this Report

# Douglas Partners



## Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

## Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

## Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

## Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

## Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

# *About this Report*

## **Site Anomalies**

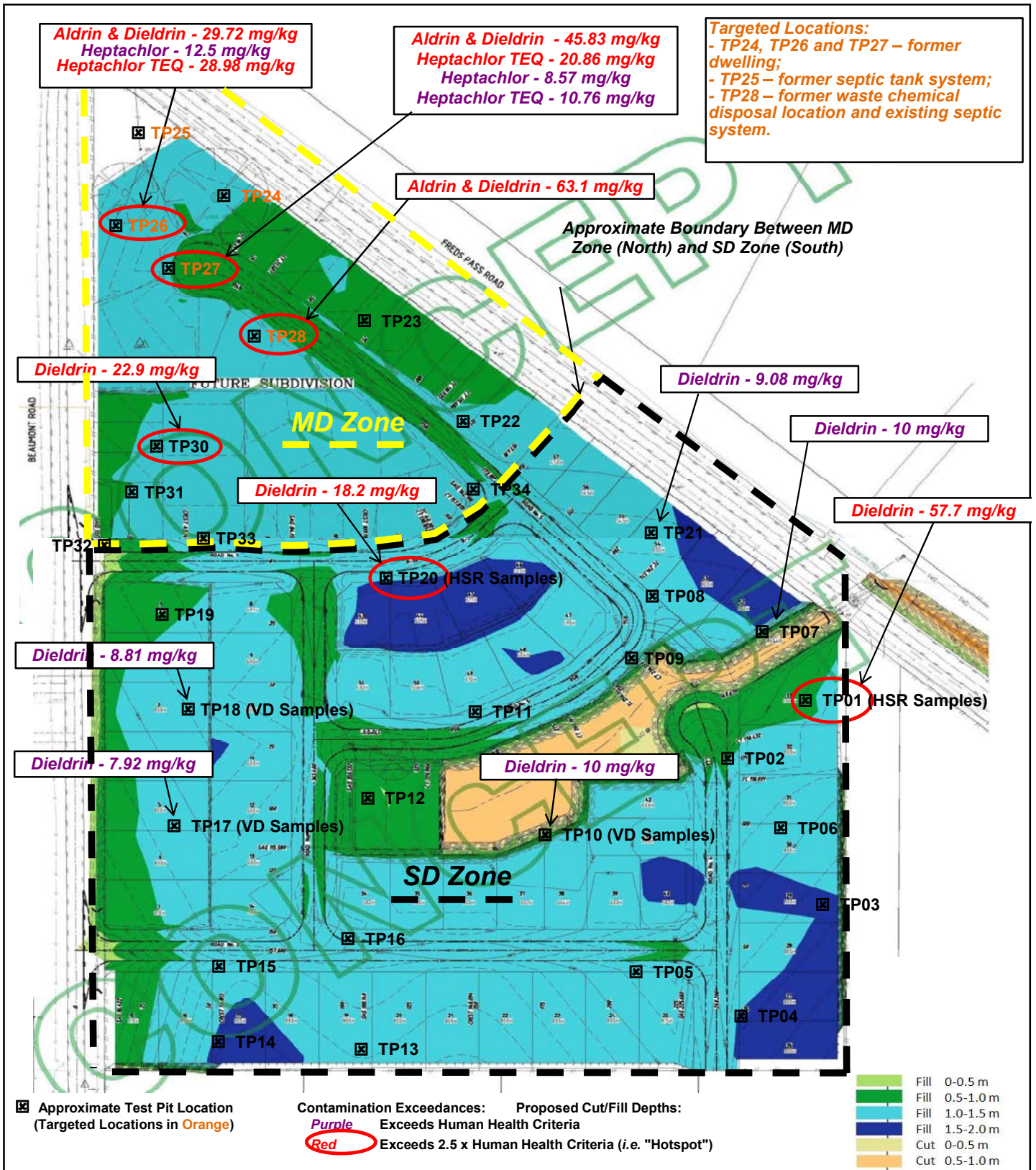
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

## **Information for Contractual Purposes**


Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

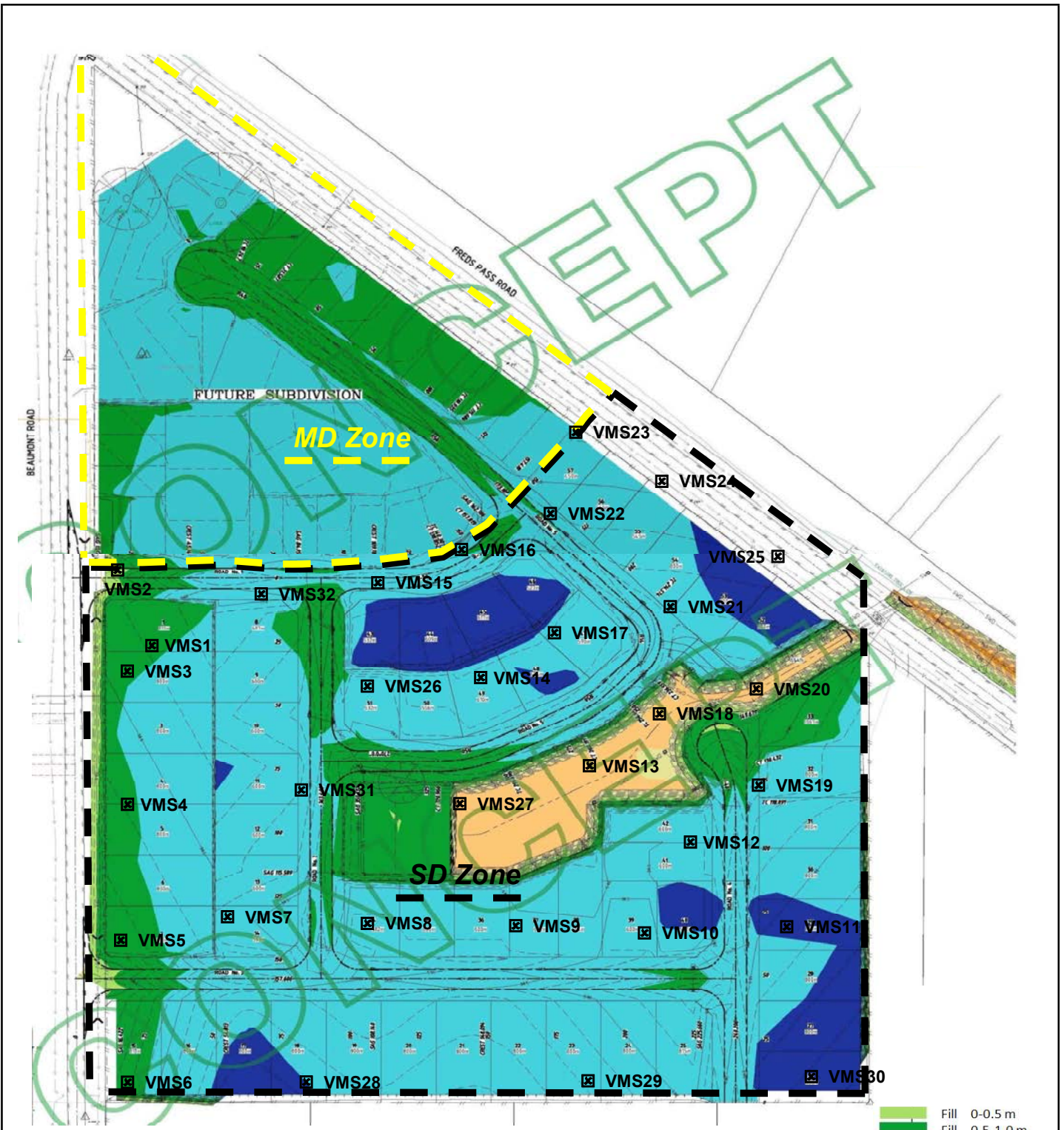
## **Site Inspection**

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.




Drawing adapted from BMD Consulting Drawings B00153-CE001 and B00153-CE002 (Not to Scale)

 <p><b>Douglas Partners</b> Geotechnics   Environment   Groundwater</p>	<p><b>Test Pit, VD and HSR Sampling Locations - SD Zone</b></p> <p><b>Proposed Residential Subdivision</b></p> <p><b>Lot 3 Freds Pass Road</b></p> <p><b>Humpty Doo, Northern Territory</b></p>	<p>Project 78156.02</p>
	<p>CLIENT: Mr Peter Poniris</p>	<p>DRAWING: 1</p>
	<p>DATE: 12-Oct-16</p>	<p>REV: 0</p>
	<p>DATE: 12-Oct-16</p>	<p>REV: 0</p>



☒ Approximate Sampling Location

Drawing adapted from BMD Consulting Drawings B00153-CE001 and B00153-CE002 (Not to Scale)

 <p><b>Douglas Partners</b> Geotechnics   Environment   Groundwater</p>	<p><b>VM Sampling Locations - SD Zone</b></p> <p><b>Proposed Residential Subdivision</b></p> <p><b>Lot 3 Freds Pass Road</b></p> <p><b>Humpty Doo, Northern Territory</b></p>	<p>Project 78156.02</p>
	<p>CLIENT: Mr Peter Poniris</p>	<p>DRAWING: 2</p>
	<p>DATE: 12-Oct-16</p>	<p>REV: 0</p>

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## **Appendix B**

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Notes on Sampling Methods, Soil Descriptions and  
Symbols & Abbreviations

Test Pits Logs

Sketch of OCP Hotspot Stockpile Sampling Locations

Site Stripping Reports

Sketch of Topsoil Stockpile Sampling Locations

Site Photographs



## Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

## Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

## Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

## Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

## Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

## Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

## Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:  
4,6,7  
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:  
15, 30/40 mm

# Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

## **Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests**

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



## Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

## Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

## Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

## Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 - 5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

# *Soil Descriptions*

## **Soil Origin**

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

# Symbols & Abbreviations

# Douglas Partners



## Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

## Drilling or Excavation Methods

C	Core Drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

## Water

▷	Water seep
▽	Water level

## Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U <sub>50</sub>	Undisturbed tube sample (50mm)
W	Water sample
pp	pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

## Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

## Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

## Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

## Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

## Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

## Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

## Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough



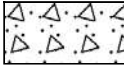

## Other

fg	fragmented
bnd	band
qtz	quartz



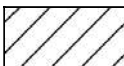

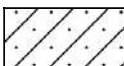


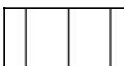

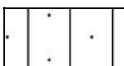
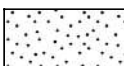
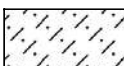



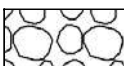

# Symbols & Abbreviations

## Graphic Symbols for Soil and Rock




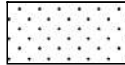
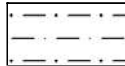
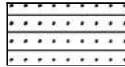
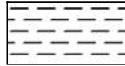

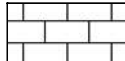
### General

	Asphalt
	Road base
	Concrete
	Filling

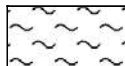
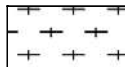
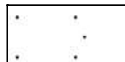
### Soils

	Topsoil
	Peat
	Clay
	Silty clay
	Sandy clay
	Gravelly clay
	Shaly clay
	Silt
	Clayey silt
	Sandy silt
	Sand
	Clayey sand
	Silty sand
	Gravel
	Sandy gravel
	Cobbles, boulders
	Talus

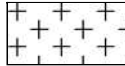

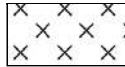
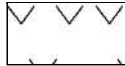
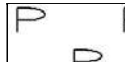
### Sedimentary Rocks

	Boulder conglomerate
	Conglomerate
	Conglomeratic sandstone
	Sandstone
	Siltstone
	Laminite
	Mudstone, claystone, shale
	Coal
	Limestone

### Metamorphic Rocks

	Slate, phyllite, schist
	Gneiss
	Quartzite

### Igneous Rocks

	Granite
	Dolerite, basalt, andesite
	Dacite, epidote
	Tuff, breccia
	Porphyry

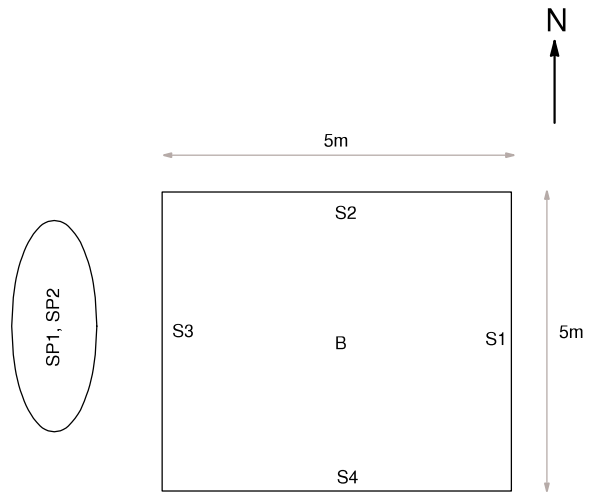
# TEST PIT LOG

**CLIENT:** Mr Peter Poniris  
**PROJECT:** Validation Assessment  
**LOCATION:** Lot 3 Fred Pass Road, Humpty Doo, NT

**SURFACE LEVEL:** --  
**EASTING:** 729040  
**NORTHING:** 8608381

**PIT No:** HSR/TP01  
**PROJECT No:** 78156.02  
**DATE:** 31/8/2016  
**SHEET 1 OF 1**

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)				
				Type	Depth	Sample	Results & Comments		5	10	15	20	
	0.3	SILTY SAND: medium dense, brown, silty sand.	[Symbol]		0.3								
	0.3	CLAYEY SAND: medium dense, orange-brown, clayey sand.	[Symbol]	E			S1, 310816Rep2 S2 S3 S4						
	1.5	Pit discontinued at 1.5m		E	1.5		B						



Indicative Sample Locations (NTS)

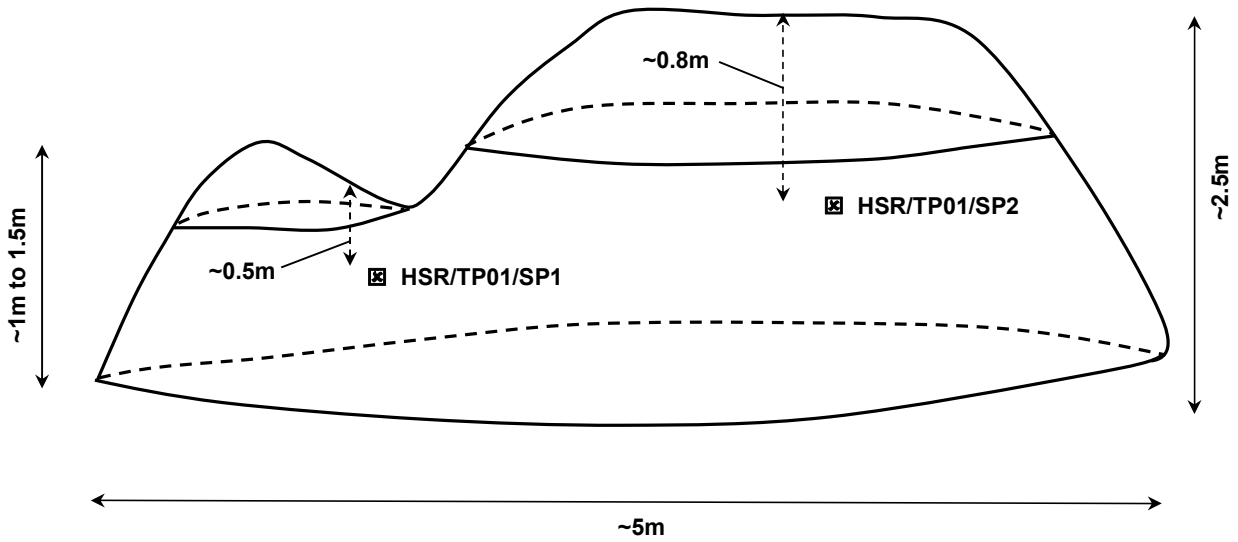
**RIG:** CAT12t excavator with 1200mm shovel and 450mm rock tooth bucket **LOGGED:** J. Paulsen **SURVEY DATUM:** WGS84 Zone 52

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- Sand Penetrometer AS1289.6.3.3
- Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	≻	Water seep
E	Environmental sample	≻	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



Sketch of HSR Stockpile from TP01

Notes:

1. ☒ denotes approximate location of sample
2. Sketches are Not to Scale
3. Dimensions are approximate only
4. Stockpile volume estimated to be about 38m<sup>3</sup> (no bulking factor) based on excavation dimensions.



Photo of HSR Stockpile from TP01 (taken while sampling)



**Sketch of HSR Stockpile Sampling Locations**  
**Proposed Residential Subdivision**  
**Lot 3 Freds Pass Road**  
**Humpty Doo, Northern Territory**

CLIENT: Mr Peter Poniris

Project 78156.02

Sketch 1

REV: 0

DATE: 18-Oct-16

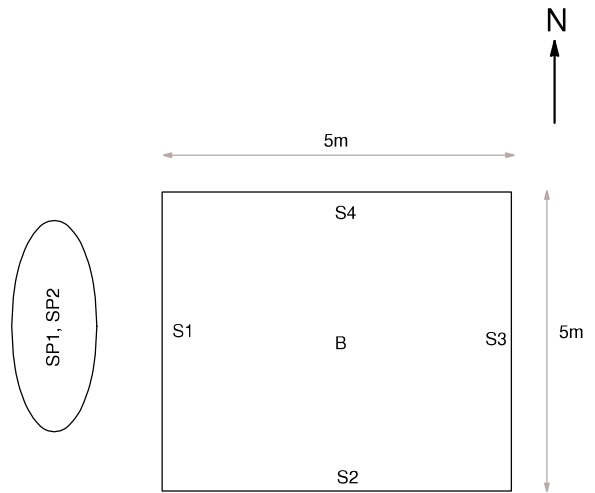
# TEST PIT LOG

**CLIENT:** Mr Peter Poniris  
**PROJECT:** Validation Assessment  
**LOCATION:** Lot 3 Fred Pass Road, Humpty Doo, NT

**SURFACE LEVEL:** --  
**EASTING:** 728900  
**NORTHING:** 8608428

**PIT No:** HSR/TP20  
**PROJECT No:** 78156.02  
**DATE:** 31/8/2016  
**SHEET 1 OF 1**

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.4	GRAVELLY SAND: medium dense, brown, gravelly sand, minor grass roots.	[Graphic Log: Gravelly sand with small circles representing gravel]	E	0.4		S1 S2 S3 S4					
		GRAVELLY SAND: medium dense, yellow-brown, gravelly sand.  ....becoming orange-brown, with variable cementation.										
	1.8	Pit discontinued at 1.8m		E	1.8		B, 310816Rep1					



Indicative Sample Locations (NTS)

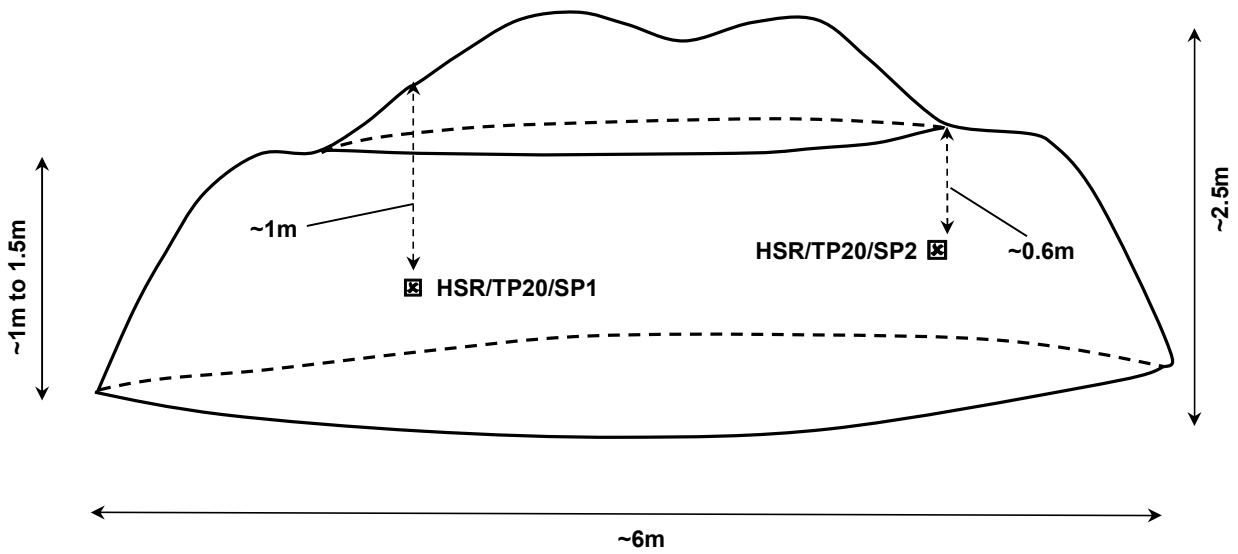
**RIG:** CAT12t excavator with 1200mm shovel and 450mm rock tooth bucket **LOGGED:** J. Paulsen **SURVEY DATUM:** WGS84 Zone 52

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- Sand Penetrometer AS1289.6.3.3
- Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	≧	Water seep
E	Environmental sample	≧	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



Sketch of HSR Stockpile from TP20

Notes:

1.  denotes approximate location of sample
2. Sketches are Not to Scale
3. Dimensions are approximate only
4. Stockpile volume estimated to be about 45m<sup>3</sup> (no bulking factor) based on excavation dimensions.



Photo of HSR Stockpile from TP20



**Sketch of HSR Stockpile Sampling Locations**  
**Proposed Residential Subdivision**  
**Lot 3 Freds Pass Road**  
**Humpty Doo, Northern Territory**

CLIENT: Mr Peter Poniris

Project 78156.02

Sketch 2

REV: 0

DATE: 18-Oct-16

# TEST PIT LOG

**CLIENT:** Mr Peter Poniris  
**PROJECT:** Validation Assessment  
**LOCATION:** Lot 3 Fred Pass Road, Humpty Doo, NT

**SURFACE LEVEL:** --  
**EASTING:** 728958  
**NORTHING:** 8608335

**PIT No:** VD/TP10  
**PROJECT No:** 78156.02  
**DATE:** 31/8/2016  
**SHEET 1 OF 1**

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)				
				Type	Depth	Sample	Results & Comments		5	10	15	20	
	0.35	SILTY SAND: dense, dark brown, silty fine to coarse grained sand with some gravel, fine to medium rounded to sub-rounded gravel, humid	E	0.1									
		SILTY SAND: medium dense to dense, red brown, silty fine to medium grained sand with some gravel, fine to medium rounded to sub-rounded gravel, humid	E	0.25									
		...orange brown and red brown, becoming more clayey and silty sand	E	0.5									
	1.1	Pit discontinued at 1.1m , target depth reached	E	1.0			Replicate 3 / 310816						



**RIG:** CAT12t excavator with 450mm rock tooth bucket

**LOGGED:** J. Paulsen

**SURVEY DATUM:** WGS84 Zone 52

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- Sand Penetrometer AS1289.6.3.3
- Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	≧	Water seep
E	Environmental sample	≧	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

# TEST PIT LOG

**CLIENT:** Mr Peter Poniris  
**PROJECT:** Validation Assessment  
**LOCATION:** Lot 3 Fred Pass Road, Humpty Doo, NT

**SURFACE LEVEL:** --  
**EASTING:** 728841  
**NORTHING:** 8608334

**PIT No:** VD/TP17  
**PROJECT No:** 78156.02  
**DATE:** 31/8/2016  
**SHEET 1 OF 1**

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.2	SILTY SAND: dense, grey brown, slightly gravelly silty fine to coarse grained sand, fine to medium sub-rounded to sub-angular gravel, humid	[Symbol]	E	0.1		Replicate 4 / 310816					
			[Symbol]	E	0.25							
		SILTY SAND: loose to medium dense, orange brown, silty fine to medium grained sand with some gravel, fine to medium rounded to sub-rounded gravel, humid	[Symbol]	E	0.5							
	0.75	CLAYEY SAND: dese to weakly cemented, orange brown and red brown, clayey sand, medium grained sand, humid	[Symbol]									
	1.0	Pit discontinued at 1.0m , target depth reached		E	1.0							



**RIG:** CAT12t excavator with 450mm rock tooth bucket

**LOGGED:** J. Paulsen

**SURVEY DATUM:** WGS84 Zone 52

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- Sand Penetrometer AS1289.6.3.3
- Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	≻	Water seep
E	Environmental sample	≻	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pc	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

# TEST PIT LOG

**CLIENT:** Mr Peter Poniris  
**PROJECT:** Validation Assessment  
**LOCATION:** Lot 3 Fred Pass Road, Humpty Doo, NT

**SURFACE LEVEL:** --  
**EASTING:** 728848  
**NORTHING:** 8608379

**PIT No:** VD/TP18  
**PROJECT No:** 78156.02  
**DATE:** 31/8/2016  
**SHEET 1 OF 1**

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	SILTY SAND: very dense, grey brown, slightly gravelly slightly silty fine to coarse grained sand, fine to medium sub-rounded to rounded gravel, humid		E	0.1		Replicate 5 / 310816					
				E	0.25							
		SILTY SAND: dense, orange brown, silty fine to medium grained sand with some gravel, fine to medium rounded to sub-rounded gravel, humid		E	0.5							
	0.8	CLAYEY SANDY GRAVEL: weakly cemented, orange brown and yellow brown, clayey sandy gravel, fine to medium sub-rounded gravel, humid		E	1.0							
	1.1	Pit discontinued at 1.1m , target depth reached										



**RIG:** CAT12t excavator with 450mm rock tooth bucket

**LOGGED:** J. Paulsen

**SURVEY DATUM:** WGS84 Zone 52

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- Sand Penetrometer AS1289.6.3.3
- Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	≻	Water seep
E	Environmental sample	≻	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

Project: Validation Assessment - Lot 3 Humpty Doo	Project No: 78156.02
Operator: Mr Peter Poniris	Date: <u>3 OCTOBER</u> 2016
Location: Lot 3 Freds Pass Road, Humpty Doo, NT	Inspection No: 00 <u>4</u>

Area inspected:

ALL OF SO ZONE

Proving Method(s) and Equipment:

VISUAL

Details of Inspection:

ENTIRE SO ZONE NOW CLEARED OF TOPSOIL, TINED, MIXED AND RE-COMPACTED TO A SMOOTH SURFACE. MINOR EXCEPTION NEAR BORE, WHERE CLUMPS OF GRASS REMAIN.

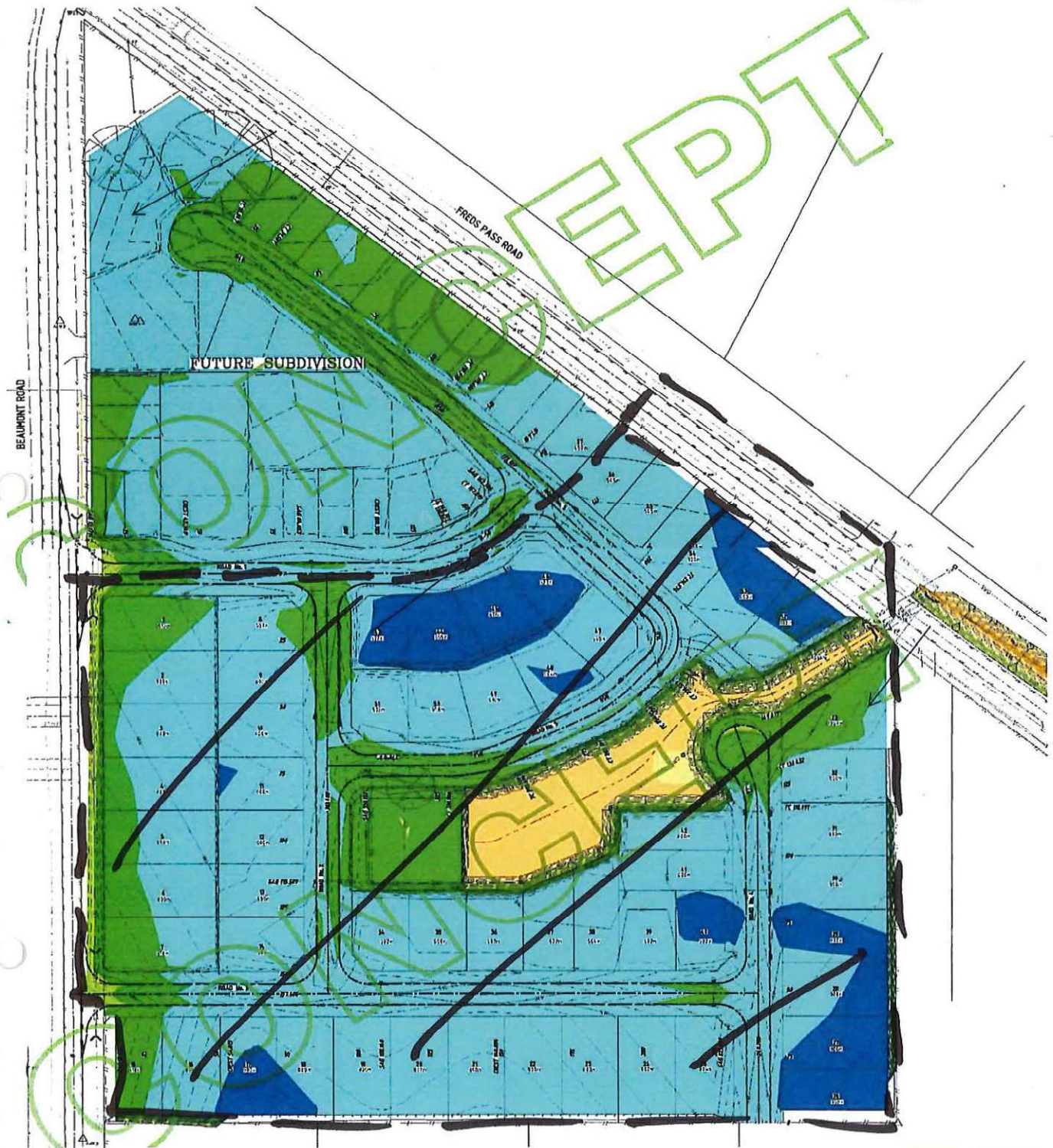
Extent of Stripping shown on attached Plan:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Extent of Stripping shown on Master Plan:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is reinspection required?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

If "yes"; where?

Inspected by: <u>A. GAVE</u>	Date: <u>3/10/16</u>
------------------------------	----------------------

Distribution	
PM:	Date:
LEM:	Date:
File:	Date:

LEGEND



Proposed cut/fill depths

- Fill 0-0.5 m
- Fill 0.5-1.0 m
- Fill 1.0-1.5 m
- Fill 1.5-2.0 m
- Cut 0-0.5 m
- Cut 0.5-1.0 m

Not to Scale



**Earthworks Plan Overlay**  
**Proposed Residential Subdivision**  
**Lot 3 Freds Pass Road**  
**Humpty Doo, NT**

CLIENT: Tolinchlo Pty Ltd

Project	78156.01
Drawing	3
REV:	0
DATE:	5-Apr-16

Project: Validation Assessment - Lot 3 Humpty Doo	Project No: 78156.02
Operator: Mr Peter Poniris	Date: <u>23/9/16</u> 2016
Location: Lot 3 Freds Pass Road, Humpty Doo, NT	Inspection No: 00 <u>3</u>

Area inspected: Most of All of MD.  
See attached plans

Proving Method(s) and Equipment:  
Visual Assessment.

Details of Inspection:  
The entirety of MD except a small section around TPO1 has now been cleared off topsoil. Ripping has begun in an L shape on the back corner of MD. Some of this has

Extent of Stripping shown on attached Plan:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Extent of Stripping shown on Master Plan:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is reinspection required?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If "yes", where?		

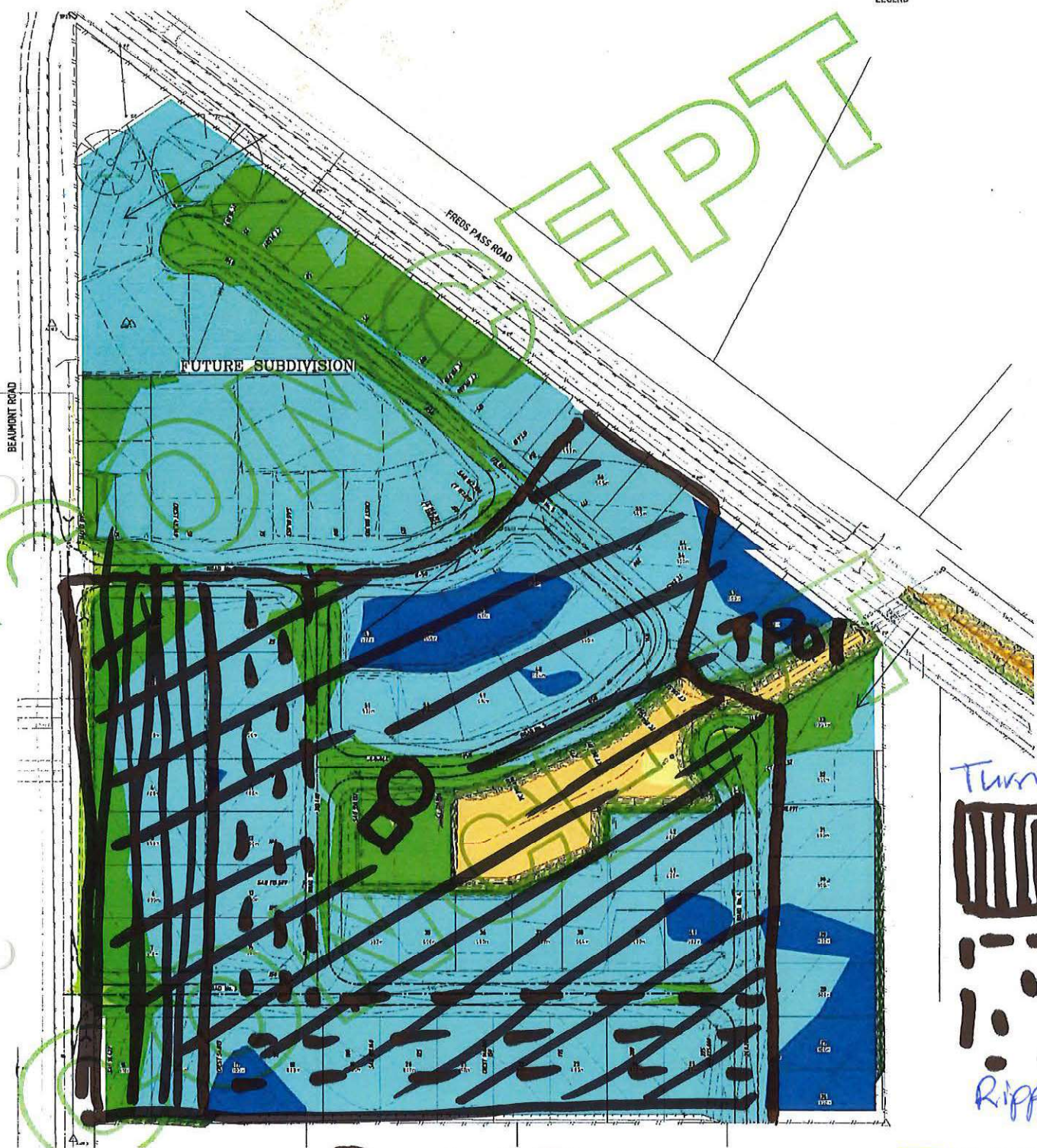
has been turned & sampled. See plan

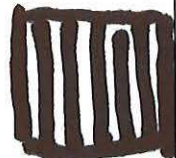
Inspected by: <u>Vanessa Harrington</u>	Date: <u>23/9/16</u>
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<b>Distribution</b>	
PM:	Date:
LEM:	Date:
File:	Date:







LEGEND

LEPT



Turned  
  
 Ripped.




 Proposed cut/fill depths  
 Topsoil  
 Cleaned.

-  Fill 0-0.5 m
-  Fill 0.5-1.0 m
-  Fill 1.0-1.5 m
-  Fill 1.5-2.0 m
-  Cut 0-0.5 m
-  Cut 0.5-1.0 m

Not to Scale

Water  
 Mango  
 Pump Tree



Earthworks Plan Overlay  
 Proposed Residential Subdivision  
 Lot 3 Freds Pass Road  
 Humpty Doo, NT

CLIENT: Tolinchlo Pty Ltd

Project	78156.01
Drawing	3
REV:	0
DATE:	5-Apr-16

Project: Validation Assessment - Lot 3 Humpty Doo	Project No: 78156.02
Operator: Mr Peter Poniris	Date: 21 September 2016
Location: Lot 3 Freds Pass Road, Humpty Doo, NT	Inspection No: 002

Area inspected:  
SEE ATTACHED PLAN

Proving Method(s) and Equipment:  
VISUAL INSPECTION

Details of Inspection:  
The area shown on the plan has been cleared of topsoil, including surface vegetation & root zone. A SMALL AREA REMAINS AROUND A LARGE MANGO TREE NEAR  $\downarrow$  OF THE SITE.

Extent of Stripping shown on attached Plan:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Extent of Stripping shown on Master Plan:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is reinspection required?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

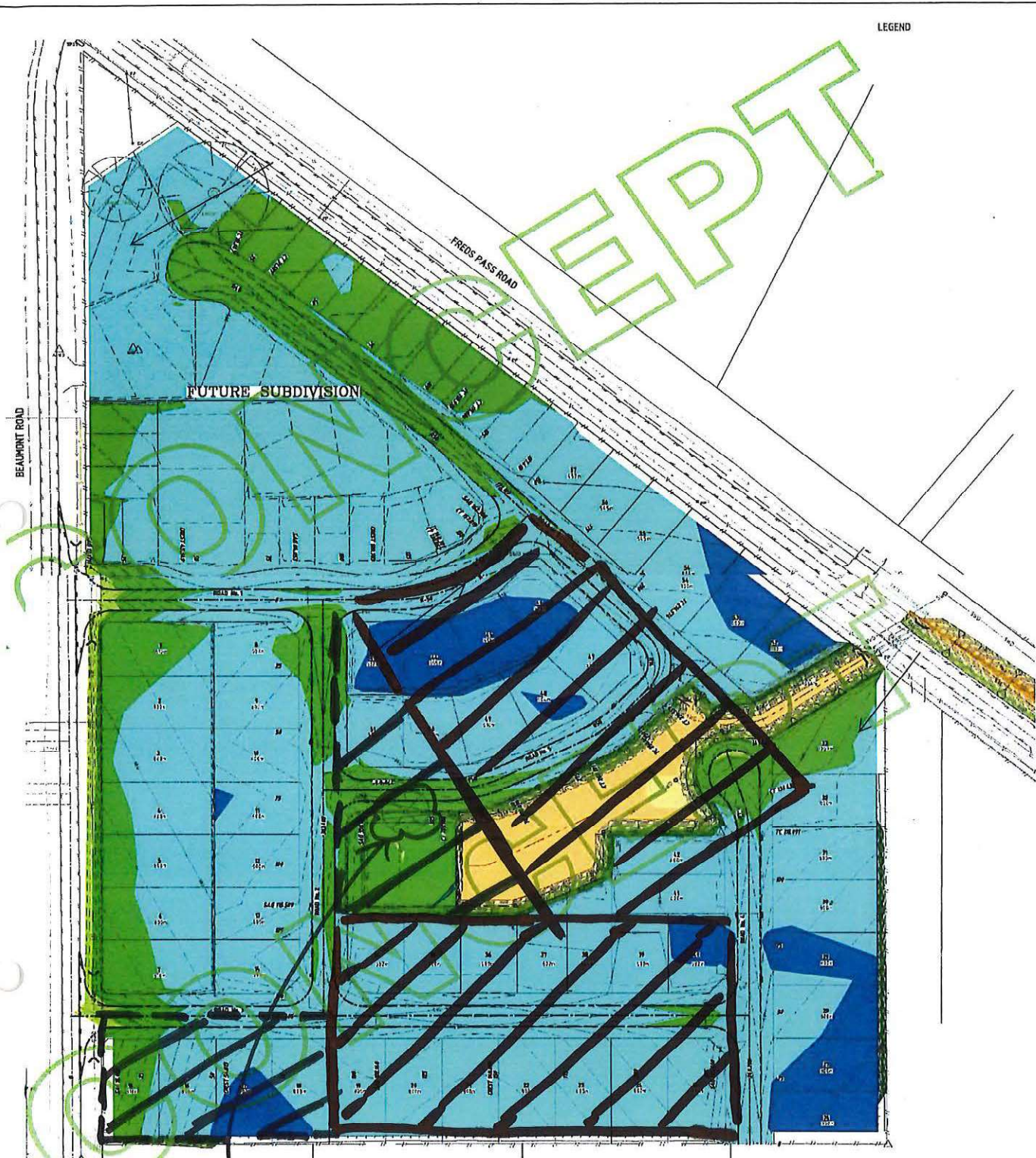
If "yes"; where?

Inspected by: Vanessa Harrington Date: 21/9/16

<b>Distribution</b>	
PM:	Date:
LEM:	Date:
File:	Date:

LEGEND

EPT



- Fill 0-0.5 m
- Fill 0.5-1.0 m
- Fill 1.0-1.5 m
- Fill 1.5-2.0 m
- Cut 0-0.5 m
- Cut 0.5-1.0 m

SMALL AREA OF TS REMAINING UNDER MANGO TREE

Proposed cut/fill depths

Not to Scale



Earthworks Plan Overlay  
 Proposed Residential Subdivision  
 Lot 3 Freds Pass Road  
 Humpty Doo, NT

CLIENT: Tolinchlo Pty Ltd

Project	78156.01
Drawing	3
REV:	0
DATE:	5-Apr-16

Project: Validation Assessment - Lot 3 Humpty Doo	Project No: 78156.02
Operator: Mr Peter Poniris	Date: 19 September 2016
Location: Lot 3 Freds Pass Road, Humpty Doo, NT	Inspection No: 001

Area inspected:  
SEE ATTACHED PLAN

Proving Method(s) and Equipment:  
VISUAL INSPECTION.

Details of Inspection:  
AREA SHOWN ON PLAN HAS BEEN ADEQUATELY CLEARED OF VEGETATION, TOPSOIL AND ROOTS / ROOTLETS.

Extent of Stripping shown on attached Plan:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Extent of Stripping shown on Master Plan:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is reinspection required?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

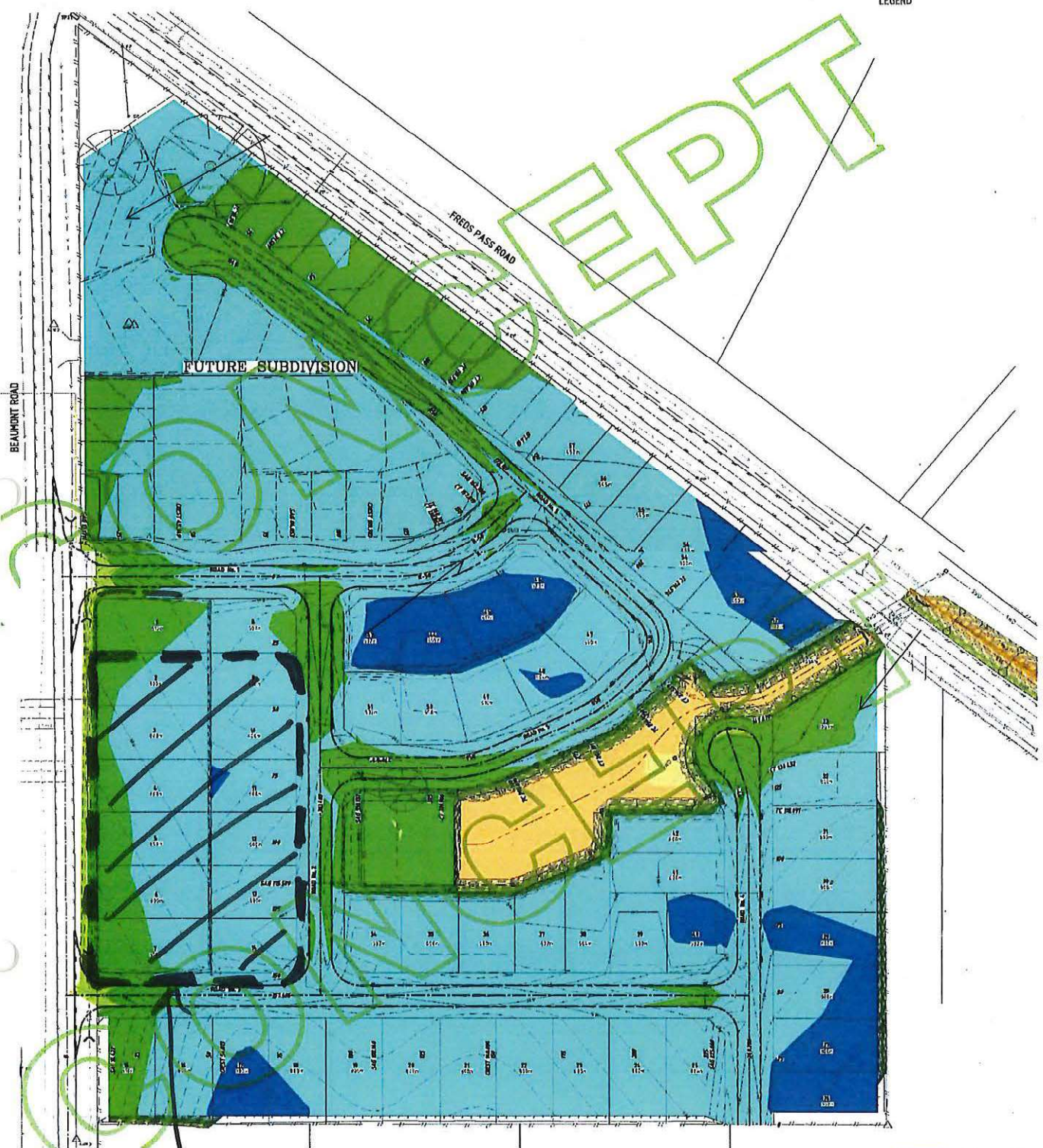
If "yes"; where?

Inspected by: A. CAINE & V. HARRIS Date: 19/9/16

<b>Distribution</b>	
PM:	Date:
LEM:	Date:
File:	Date:

LEGEND

EPT



APPROXIMATE AREA INSPECTED 19/9/16. Proposed cut/fill depths

	Fill 0-0.5 m
	Fill 0.5-1.0 m
	Fill 1.0-1.5 m
	Fill 1.5-2.0 m
	Cut 0-0.5 m
	Cut 0.5-1.0 m

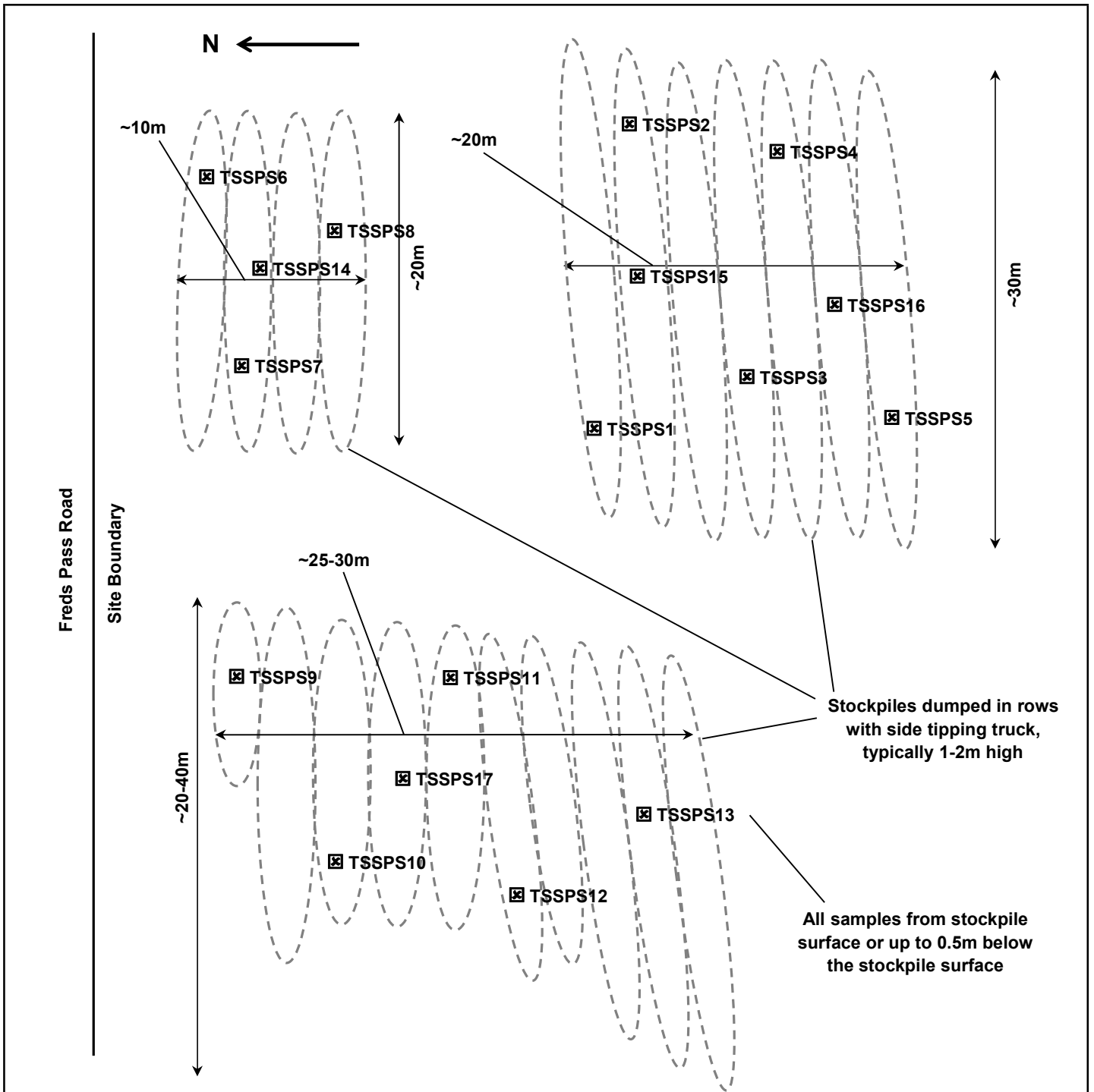
Not to Scale



Earthworks Plan Overlay  
 Proposed Residential Subdivision  
 Lot 3 Freds Pass Road  
 Humpty Doo, NT

CLIENT: Tolinchlo Pty Ltd

Project	78156.01
Drawing	3
REV:	0
DATE:	5-Apr-16



**Plan View of Topsoil Stockpiles (refer to Photo 8 in Appendix B)**

**Notes:**

1. ☒ denotes approximate location of sample
2. Sketches are Not to Scale
3. Dimensions are approximate only
4. Total volume of stockpiles estimated to be about 1200 to 2000m<sup>3</sup> (no bulking factor) based on site area and depth of stripping.

	<b>Sketch of Topsoil Stockpile Sampling Locations</b> <b>Proposed Residential Subdivision</b> <b>Lot 3 Fred's Pass Road</b> <b>Humpty Doo, Northern Territory</b>		Project: 78156.02
			Sketch: 3
	CLIENT: Mr Peter Poniris		REV: 0
			DATE: 18-Oct-16



Photo 1: Typical site surface post topsoil stripping



Photo 2: Topsoil stockpile on the MD site



Project No.  
78156.02

Site Photographs

Photo Date:  
[See Photo](#)

Remediation and Validation - SD Zone

Client: Mr Peter Poniris



Photo 3: Trial mixing area



Photo 4: Topsoil, stripped and winrowed prior to removal from the SD zone



Project No.  
78156.02

Site Photographs

Photo Date:  
[See Photo](#)

Remediation and Validation - SD Zone

Client: Mr Peter Poniris



Photo 5: Mixed soil (RHS) ready for validation sampling



Photo 6: Tyned area prior to mixing (RHS)



Project No.  
78156.02

Site Photographs

Photo Date:  
[See Photo](#)

Remediation and Validation - SD Zone

Client: Mr Peter Poniris



Photo 7: Partially backfilled hotspot excavation



Photo 6: Area that has been re-compacted and sealed after mixing



Project No.  
78156.02

Site Photographs

Photo Date:  
[See Photo](#)

Remediation and Validation - SD Zone  
Client: Mr Peter Poniris



Photo 7: Overview of SD Zone after re-compaction and sealed, post mixing



Photo 8: Topsoil stockpiles on MD Zone



Project No.  
78156.02

Site Photographs

Photo Date:  
[See Photo](#)

Remediation and Validation - SD Zone

Client: Mr Peter Poniris