

**GEO-TESTING SERVICES**

GROUND INVESTIGATION SERVICES

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**REPORT**

**ON**

**INTRUSIVE INVESTIGATION, SAMPLING**

**and**

**TESTING**

**of land at**

**ALONDSBURY PARISH COUNCIL**

**ALMONDSBURY, BRISTOL**

**on behalf**

**of**

**ALMONDSBURY PARISH COUNCIL.**

**REPORT NO: 2017/7328**

**DATE: NOVEMBER 2017.**

Company Registration No: 09726776  
VAT Registration No: 220 9896 90

**Geo-Testing Services**  
The Estate Office  
Walnut Tree Farm  
Cleeve  
Bristol  
BS49 4PQ  
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## **1.INTRODUCTION.**

### **1.1 Terms of reference.**

This report describes the ground investigation carried out on the site Almondsbury Parish Council offices on the 30<sup>th</sup> October, 2017 in accordance with instructions received from The Parish Council.

The site is located at 24a Gloucester Road Bristol a post code of BS32 4HA.

The intrusive phase of this investigation involved drilling a total of three window sampling boreholes and the construction of a trial hole for BRE 365 purposes.

### **1.2 Development proposals.**

The site is to be developed by way of a replacement building at the rear and a new garage type structure at the front.

## **2. OBJECTIVES OF INVESTIGATION.**

The purpose of the desk study and intrusive investigation has been to establish the geotechnical conditions of the site and to extract samples prior to development.

The scope of works to fulfil the purpose of the assessment has included the following:

- Delineate the strata succession at succession at three dynamic soil sampling boreholes, their positions and depths are shown on the appropriate log sheets. This method of "Window Sampling" exploration was chosen to suit the existing access and to limit disturbance.
- Undertake such insitu and field testing as the sub soil circumstances dictate.
- Observe and record the presence and level of water in the boreholes during the investigation.
- To carry out a percolation test in accordance with BRE 365 to establish the likely infiltration rates of the sub soils.

### **3. CURRENT SITE DESCRIPTION AND LOCATION.**

#### **3.1 Site location.**

The site is situated in a suburb of Bristol called Almondsbury and is adjacent to the A38 highway. A site location plan is appended to this report.

#### **3.2 Site description.**

The site comprises a small area of land which houses the present Parish Council Offices. The land is adjacent to the old Thornbury Cottage Hospital.

### **4. ENVIRONMENTAL SETTING.**

#### **4.1 Published geology.**

The solid geology of the site is illustrated within the environmental database report and also on the British Geological Survey (BGS) on-line mapping database which indicate the site is predominantly underlain by the Oxwich Head Limestone Formation. This is sedimentary bedrock that formed approximately 329 to 337 million years ago in the Carboniferous Period when the local environment would have previously been dominated by shallow carbonate seas.

These sedimentary rocks are shallow-marine in origin. They are biogenic and detrital, generally comprising carbonate material (coral, shell fragments), forming beds, and locally reefs.

These rocks are generally described as thick bedded fine- to coarse-grained, re-crystallised, bioturbated skeletal packstones with distinctive pale to dark grey mottling and pseudobrecciation and ooidal limestones.

There is no drift (superficial) geology recorded in this area.

## 5. INVESTIGATIVE WORK

### 5.1 Window sampling boreholes.

The plan appended to this report indicates the approximate position of the three boreholes constructed during the investigation. These were determined in the light of the site access and the positions of underground services.

Prior to boring each position was scanned using a Cable Avoidance Tool. A rubber tracked Archway Competitor 130 rig was used to bore the holes by the lined windowless Dynamic Soil Sampling technique.

This enables virtually continuous disturbed soil samples to be recovered in polythene liners after driving a steel sample barrel into the ground usually in 1m sections.

The recovered samples were examined on site and sub-sampled for transportation to the laboratory.

Where appropriate at 1m intervals insitu Standard Penetration Tests were completed and the "N" values measured are included the appended schedule.

Observations were kept concerning the presence and level of water in the holes including prior to backfilling.

Observations for any olfactory or visual evidence of ground gas were undertaken during the construction of the boreholes

The boreholes terminated at the depths shown on the appended log sheets.

### **5.2 Laboratory Testing.**

On the borehole logs, shown as "DS" (Disturbed Sample), samples have been taken and have been used for chemical testing to address the issue of potential contamination as follows.

### **5.3 Potential Contaminant Sources.**

The potential types of contaminants of concern are listed below:

- Metals, semi-metals, and inorganics within any shallow made ground;
- Polyaromatic hydrocarbons (PAH) within any shallow made ground;

### **5.4 Potential Exposure Pathways.**

Potential exposure pathways for the critical receptors (both human health and controlled waters) are listed below:

- Dermal contact with soil and/or soil derived dust
- Inhalation of soil derived dust
- Inhalation of vapours – indoor and outdoor air
- Leaching of contaminants from adjacent made ground (infill) to groundwater
- Transportation of contaminants within groundwater

## **6.0 GROUND CONDITIONS**

### **6.1 Introduction.**

The ground conditions observed across the site demonstrated the anticipated published bedrock detailed elsewhere in this report but in general the site is underlain a thin layer of made ground comprising normal hardcore.

## **6.2 Natural Ground.**

The natural strata succession encountered in the boreholes is consistent with that expected from an examination of the geological map. There are very few variations in detail and the condition across the site are uniform.

In general this comprised a layer of silty sandy clays [with some root infestation] overlying insitu mudstones and limestone.

## **6.3 Groundwater.**

No boreholes encountered groundwater during their construction.

## **7. CONCLUSIONS & RECOMMENDATIONS**

The following conclusions may be drawn from this report.

### **Contamination.**

The samples tested do not indicate any exceedances of the normal contaminants which would apply to a commercial building with public use and no plant up take. A list of recognised Soil Guideline Values is appended to this report in addition to those detailed on the actual test results.

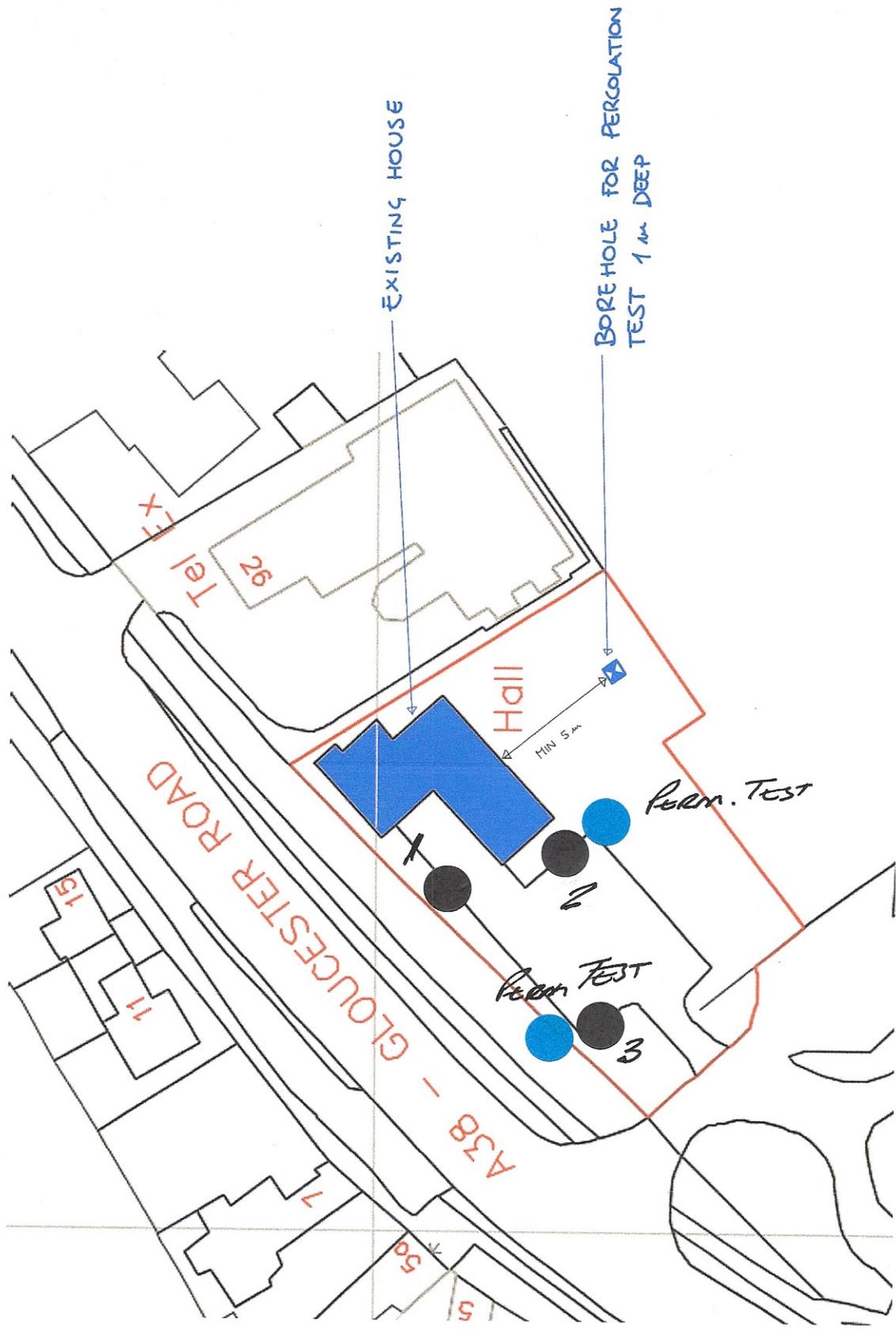
There is therefore no source of contamination over the area tested and the site is considered to present no risk to human health or the environment.

**Percolation/ Soakaways.**

The results of the BRE 365 test carried out on the site at the location shown on the appended plan indicate that the c 1.00m of material overlying the insitu rocks will be suitable for the construction of a soakaway. The results indicate that these materials have a Coefficient of Permeability [k/ms] of the order of  $2 \times 10^{-5}$ . The insitu rocks will have a lesser ability to disperse water.

It is considered that a soakaway some 2.00m long by 1.50m wide founded on the insitu rocks will be adequate to dispose of the surface water arising under the normal design requirements. However given that there is an on-site drainage system it may well be that this is the better option.

# **BOREHOLE LOCATION PLAN.**



- SOAK AWAY TEST
- WINDOW SAMPLING BOREHOLE

Job	17061 24A GLOUCESTER RD	Title	BOREHOLE FOR PERCOLATION TEST LOCATION	RISE Structural Engineers Ltd. 26A Oakfield Road Clifton Bristol BS8 2AT
Drawing Status	PRELIMINARY	Scale		RISE Consulting Structural Engineers
		Date	12/09/13	
		By	HR	
		Checked		
		Drawing Number	17061 / SK01	+44 (0) 117 317 9801 info@risestructures.com
		Revision	PI	

# **BOREHOLE LOG SHEETS.**



# GEO-TESTING SERVICES

Tel: 0117 9634471

**Site**

Scout Hut, Almondsbury

**Number**  
**WS3**

**Excavation Method**

Drive-in Window Sampler

**Dimensions**

100mm to 1.0m  
60mm to 1.2m

**Ground Level (mOD)**

**Client**

Almondsbury Parish Council

**Job Number**  
2017/7328

**Location**

**Dates**

30/10/2017

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.05)	MADE GROUND		
					(0.05)	Firm, orange/brown SILTY SANDY CLAY		
0.40	DS1				(0.55)			
					0.60	Very hard, grey/brown MUDSTONE with some orange mottling		
0.80	DS2				(0.40)			
					1.00	Very hard, white/pale grey LIMESTONE		
					(0.20)			
					1.20	Complete at 1.20m		

**Remarks**

Scale (approx)  
1:20

Logged By

Figure No.  
2017/7328.WS3



# GEO-TESTING SERVICES

Tel: 0117 9634471

Site

Scout Hut, Almondsbury

Number  
**WS2**

Excavation Method

Drive-in Window Sampler

Dimensions

100mm to 1.0m  
60mm to 2.0m

Ground Level (mOD)

Client

Almondsbury Parish Council

Job  
Number  
2017/7328

Location

Dates

30/10/2017

Engineer

Sheet  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	DS1				(0.15)	MADE GROUND		
					0.15	Hard, dark brown, SANDY SILTY CLAY with small GRAVELS		
					(0.15)			
0.70	DS2				0.30	Firm, grey/brown mottled MUDSTONE with lots of roots and large grey limestone cobbles		
					(0.70)			
1.50	DS3				1.00	Extremely hard, grey/brown, very dense, MUDSTONE with orange/red and white/pale grey mottling		
					(0.90)			
					1.90	Very hard, grey LIMESTONE		
(0.10)								
					2.00	Complete at 2.00m		

Remarks

Scale (approx)

1:20

Logged By

GLC

Figure No.

2017/7328.WS2



# GEO-TESTING SERVICES

Tel: 0117 9634471

Site

Scout Hut, Almondsbury

Number  
**WS1**

Excavation Method

Drive-in Window Sampler

Dimensions

100mm to 1.0m

Ground Level (mOD)

Client

Almondsbury Parish Council

Job  
Number  
2017/7328

Location

Dates

30/10/2017

Engineer

Sheet  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	MADE GROUND		
					0.15	Firm, orange/brown SANDY SILTY CLAY with occasional small GRAVELS		
0.40	DS1				(0.45)			
0.60	DS2				0.60	Firm, brown/orange CLAY		
					(0.10)			
					0.70	Hard, grey LIMESTONE cobbles		
0.90	DS3				(0.30)			
					1.00	Complete at 1.00m		

Remarks

Scale (approx)

1:20

Logged By

GLC

Figure No.

2017/7328.WS1

# **CHEMICAL TEST RESULTS.**

## **GEO-TESTING SERVICES**

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### **CHEMICAL TESTS CHAIN OF CUSTODY.**

**SITE. Almondsbury P C. Bristol.**

**Laboratory: Trentside Geotechnical.**

**Sampling Date 1<sup>st</sup> November 2017.**

**Sample Location. As report plan.**

**Sample No:**

**Sample No. 7410/1 WS 1 Depth bgl 0.20m**

**Sample No. 7411/1 WS 1 Depth bgl 0.50m**

**Sample No. 7412/1 WS 2 DS 1**

**Sample No. 7413/1 WS 2 DS 2**

**Sample No. 7414/1 WS 3 DS 1**

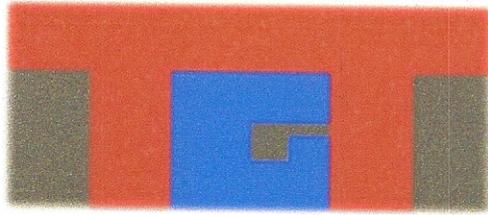
**Sample No. 7415/1 WS 3 DS 2**

**Samples despatched. 1<sup>st</sup> November 2017. [Special Delivery]**

Company Registration No: 09726776  
VAT Registration No: 220 9896 90

#### **Geo-Testing Services**

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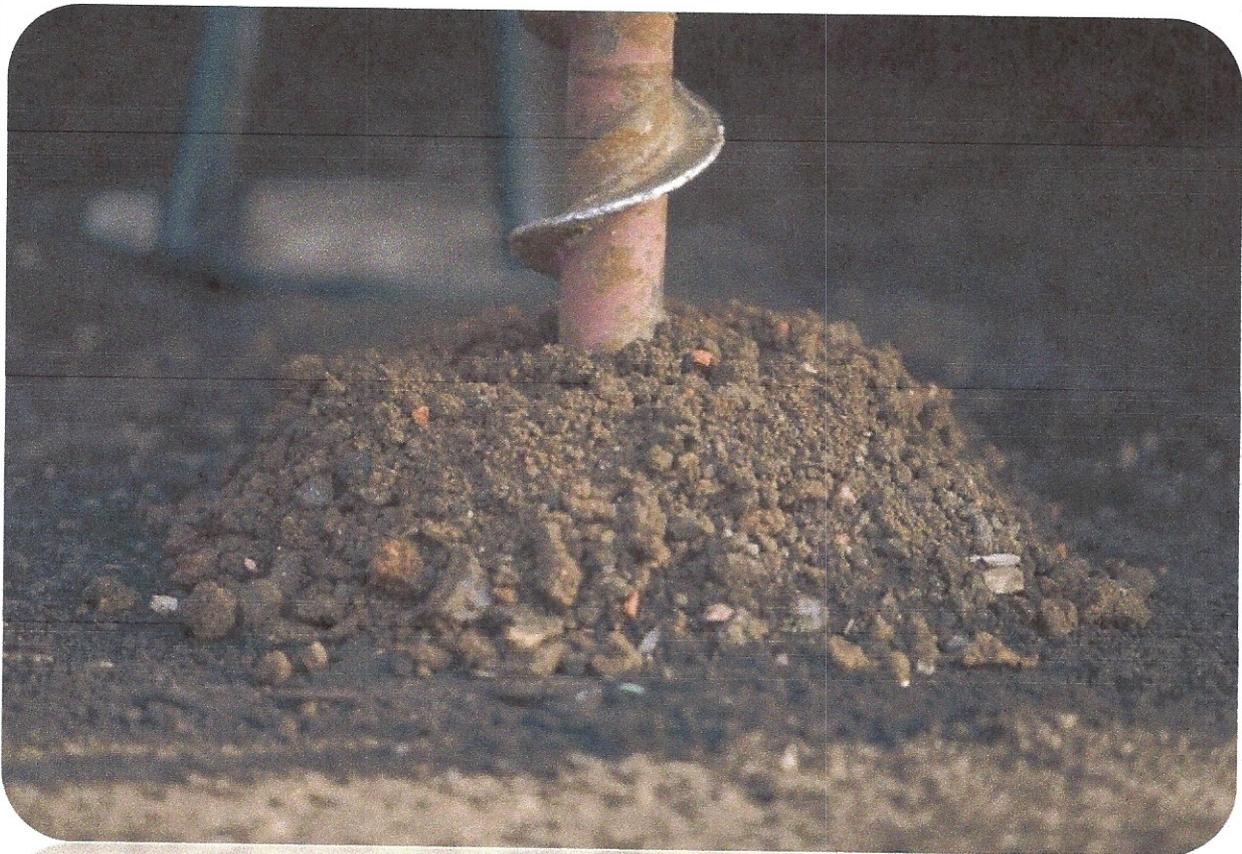
# Trentside Geotechnical Testing

Highlands Farm, Southend Road

Rettendon, Essex, CM3 8EB

Telephone/Fax: 020 34880311 Mobile: 07508 853739

Email: [info@trentsidegeotechnical.co.uk](mailto:info@trentsidegeotechnical.co.uk) Website: [www.trentsidegeotechnical.co.uk](http://www.trentsidegeotechnical.co.uk)



## Factual Report

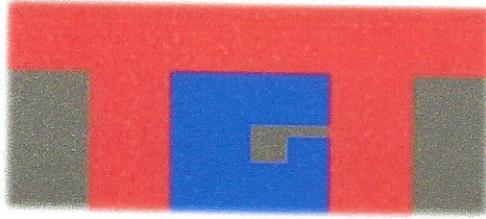
Client : Avon Testing Services

Site Name : 7410/1 - 7415/1

Client Reference : 7410/1 - 7415/1

Laboratory Reference : TGT2576

Date of Completion : 14-Nov



## Content Summary

Lab Reference : TGT2576

Client Reference : -

For the attention of : Georgina Harrison

This report comprises of the following : 1 CLEA Test Results

1 Limitations of Report

Notes :

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### General

Please refer to report summary notes for details pertaining to methods undertaken and their subsequent accreditations

Samples were supplied by Customer

All tests performed in-house unless otherwise stated

### Deviant Samples

Samples were received in suitable containers

Yes

A date and time of sampling was provided

Yes

Arrived damage/denaturing free

Yes

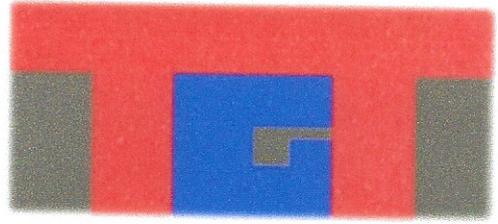


Contamination Test Results on Soil Samples

Location: 7410/1 - 7415/1		Date of Sampling: 1/11/2017						Job No:	TGT2576	Sheet 1 of 1	
Date of Results: 14/11/2017		7410-1	7411-1	7412-1	7413-1	7414-1	7415-1	ATRISK Contaminated Land Screening Values (SSV) derived using S4UL / LQM - CIEH / 2015 for 6% SOM			
Client Reference No.	Units	17-2103	17-2104	17-2105	17-2106	17-2107	17-2108				
Laboratory Sample No.								Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/Industrial
Depth (m)											
Material Type		Loamy Sand & Gravel	Loamy Sand & Gravel	Loamy Sand & Gravel	Loamy Sand & Gravel	Loamy Sand & Gravel	Loamy Sand & Gravel				
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	300	1400	57	86000
	>C7-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	660	3900	120	180000
	>C8-C10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	190	270	21	17000
	>C10-C12	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	380	1200	74	24000
	>C12-C16	1.7	2.5	0.7	<0.5	<0.5	<0.5	690	2500	130	38000
	>C16-C21	8.1	6.3	3.0	<0.6	1.9	<0.6	930	1900	260	28000
	>C21-C35	21	18	15	<1.4	19	<1.4	1700	1900	1600	28000
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	160	160	3900	12000
	>C6-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	530	530	13000	40000
	>C8-C10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	150	150	1700	11000
	>C10-C12	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	760	770	7300	47000
	>C12-C16	<1.2	1.3	<1.2	<1.2	<1.2	<1.2	4300	44000	13000	90000
	>C16-C21	<1.5	2.2	<1.5	<1.5	3.8	<1.5	110000	110000	270000	1800000
	>C21-C35	<3.4	8.2	9.5	4.6	34	<3.4	140000	110000	270000	1600000
TOTAL TPH	mg/kg	31	40	29	<10	59	<10				
Naphthalene	mg/kg	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	13	13	24	1100
Acenaphthylene	mg/kg	<0.03	0.03	<0.03	<0.03	<0.03	<0.03	920	6000	160	100000
Acenaphthene	mg/kg	0.09	<0.03	<0.03	<0.03	<0.03	<0.03	110	6000	200	100000
Fluorene	mg/kg	0.08	<0.03	<0.03	<0.03	<0.03	<0.03	860	4500	160	71000
Phenanthrene	mg/kg	0.72	0.17	0.12	0.08	0.19	<0.03	440	1500	90	23000
Anthracene	mg/kg	0.19	0.06	0.03	<0.03	0.05	<0.03	11000	1600	2200	540000
Fluoranthene	mg/kg	1.2	0.40	0.34	0.15	0.29	<0.03	890	4500	290	23000
Pyrene	mg/kg	1.1	0.39	0.34	0.14	0.23	<0.03	2000	3800	620	54000
Benz(a)anthracene	mg/kg	0.54	0.19	0.16	0.06	0.12	<0.03	13	15	13	180
Chrysene	mg/kg	0.52	0.20	0.16	0.06	0.11	<0.03	27	32	19	330
Benzo(b)fluoranthene	mg/kg	0.68	0.26	0.20	0.07	0.13	<0.03	3.7	4	3.9	45
Benzo(k)fluoranthene	mg/kg	0.30	0.11	0.08	<0.03	0.05	<0.03	100	110	130	1200
Benzo(a)pyrene	mg/kg	0.54	0.20	0.17	0.05	0.10	<0.03	3	3.2	5.7	76
Indeno(1,2,3-cd)pyrene	mg/kg	0.28	0.11	0.10	0.03	0.06	<0.03	41	46	39	510
Dibenz(ah)anthracene	mg/kg	0.08	0.03	<0.03	<0.03	<0.03	<0.03	0.30	0.32	0.43	3.6
Benzo(ghi)perylene	mg/kg	0.34	0.13	0.11	0.03	0.06	<0.03	250	360	640	4000
TOTAL PAH	mg/kg	6.7	2.3	1.8	0.66	1.4	<0.10				
Cyanide (Free)	mg/kg	0.03	0.02	0.02	0.02	0.02	<0.02	34	34	34	34
pH	unit	8.1	7.8	7.5	7.6	7.9	8.2	-	-	-	-
Copper (Total)	mg/kg	2.4	2.1	1.5	1.7	2.1	1.2	4020	8370	1110	109000
Lead (Total)	mg/kg	0.71	0.86	0.77	0.53	0.39	0.40	200	310	80	2330
Zinc (Total)	mg/kg	<1.3	<1.3	<1.3	<1.3	1.7	<1.3	3700	40000	420	73000
LQM/CIEH Generic Assessment Criteria											
Chromium (Total)	mg/kg	<0.25	0.31	<0.25	<0.25	<0.25	<0.25	910	910	18000	8600
Chromium (Hexavalent)	mg/kg	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	6	6	1.8	33
CLEA Soil Guideline Values (SGV)											
Arsenic (Total)	mg/kg	2.2	2.0	2.1	1.0	1.3	1.4	37	40	40	640
Cadmium (Total)	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	11	85	1.9	190
Mercury (Total)	mg/kg	0.02	0.01	<0.01	<0.01	<0.01	<0.01	1.2	1.2	21	58
Nickel (Total)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	130	130	230	1800
Phenols (Total)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	420	420	280	3200
Selenium (Total)	mg/kg	0.81	0.56	0.45	0.37	<0.25	0.25	350	350	120	13000
Moisture Content	%	8.5	8.1	10.8	12.4	11.3	9.4	-	-	-	-
Stones	%	6.3	8.1	12	12	18	14	-	-	-	-
Sulphate	mg/l	7.2	6.1	12	47	23	24	-	-	-	-
Elemental Sulphur	mg/kg	<84	<84	<84	<84	<84	<84	-	-	-	-
Water Soluble Boron	mg/kg	<12	<12	<12	<12	30	<12	-	-	-	-
Asbestos ID	Y/N	N	N	N	N	N	N	-	-	-	-
PCB 28 + PCB 31	mg/kg	-	-	-	-	-	<0.01				
PCB 52	mg/kg	-	-	-	-	-	<0.01				
PCB 101	mg/kg	-	-	-	-	-	<0.01				
PCB 118	mg/kg	-	-	-	-	-	<0.01				
PCB 153	mg/kg	-	-	-	-	-	<0.01				
PCB 138	mg/kg	-	-	-	-	-	<0.01				
PCB 180	mg/kg	-	-	-	-	-	<0.01				
PCB 7 Total	mg/kg	-	-	-	-	-	<0.01				

**Key**  
PAH - Polycyclic Aromatic Hydrocarbons  
TPH - Total Petroleum Hydrocarbons  
-- Not determined

**Comments**



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Where our involvement consists exclusively of testing samples, the results and comments (if provided) relate only to the samples tested.

Any samples that are deemed to be subject to deviation will be recorded as such within the test summary.