

SIMPSON MINING AND GEOTECHNICAL LTD

CONSULTING MINING & GEOTECHNICAL ENGINEERS

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55 Westerlea Drive
Bridge of Allan
FK9 4DQ

RESULTS OF CONTAMINATION TESTS

ON REPRESENTATIVE SAMPLES

FROM THE SITE AT

BROWNIESIDE, PLAINS

Client : Aspire Joinery
2 Strathearn Drive
Airdrie
ML6 7NZc

Report No : 5037/IS

Engineer : W. Simpson

Issued : 14 August 2018

APPENDIX 3/1

SIMPSON MINING & GEOTECHNICAL LTD
RESULTS OF CONTAMINATION TESTS ON REPRESENTATIVE SAMPLES
FROM THE SITE AT BROWNIESIDE PLAINS

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3. SCOPE OF STUDY.

This report contains the results of the trial pits and contamination tests carried out at the above site, together with our findings.

This report includes trial pit numbers 1A to 5A excavated by the writer on the 5th June 2018.

It is intended to construct a workshop and one new dwelling house within the site boundaries..

This report should be read together with our report, Report No 5037F dated 25th June 2018.

4. SITE WORKS.

Five trial pits were excavated by a backacter to a depth of 2.00 metres on the 5th June 2018, and the trial pits were examined and logged by the writer.

Representative samples were taken by the writer for contamination tests. After termination of the trial pits the samples were taken to Caledonian Laboratories Ltd by the writer, and handed to Mr John McKenna, a chemist and director of the company.

5. SAMPLING METHODOLOGY.

Each sample was collected from the bucket of the backacter. Samples were put into 1 litre plastic tubs, a 40ml glass vial for PAH's. 500ml glass jar samples were taken for testing for mineral oils and SVOC's. The samples were put into a refrigerated box and immediately transported to Caledonian Laboratories Ltd. The samples were transported to the laboratory in the boot of the geotechnical engineer's car.

6. CHEMICAL TESTS.

The trial pits and bores excavated for foundation purposes revealed the entire site to be underlain by a deposit of black blaes (colliery spoil) which extended down to a depths varying from 2.20 metres at trial pit numbers 2 and 3, to 2.90 metres at trial pit number 1. The engineering properties of black blaes are well known to Scottish Geotechnical Engineers. The black blaes is made up of smaller fragments of the rocks associated with coal, namely sandstone, mudstone, siltstone, coal, seat earth and in some localities limestone, fireclay and ironstone. All the above rock types are inert and chemically stable. Old black blaes bings have in the past gone on fire due to a chemical reaction of iron pyrites contained in some mudstones. This reaction gives off heat, which in turn can ignite the coal contained within the main body of the black blaes. Extensive testing by the Road Research Laboratory circa 1970 showed that if black blaes was laid down and compacted to optimum moisture content combustion would not take place. They also concluded that black blaes with a loss on ignition of less than 25 per cent was unlikely to combust.

Notwithstanding the above it was deemed prudent to test two representative samples of the black blaes for contaminants. The contaminants tested for were arsenic, cadmium, chromium, chromium VI, copper, nickel, zinc, lead, mercury, selenium, water soluble boron, soluble sulphate, monohydric phenols, free cyanide, TPH, PAH and loss on ignition. Leachability tests were also carried out on the metals.

6. CHEMICAL TESTS (cont.).

All the contaminants tested for were below the threshold values and it is concluded that the black blaes may be classified as uncontaminated.

7. CONCLUSIONS AND RECOMMENDATIONS.

1. It is recommended that that when the line of the water supply pipes has been finalised that the appropriate tests be carried out to establish the type of pipe to be adopted.
2. The black blaes is considered to be uncontaminated.
3. Gas tests were carried out in trial pits 1A to 5A, purely as a guide to deciding if gas reading standpipes were required. The readings did not reveal any gases in excess, or in depletion of background readings. The background readings were oxygen 20.9%, carbon dioxide 0.02%, methane 0%.

Gas readings were taken in the bores sunk for mining stability purposes. Again the results of the readings were the same as the background readings 20.8% oxygen, 0.03% carbon dioxide, 0% methane.

It is concluded that soil or mine gases are of a very low to negligible risk on this site.



W SIMPSON B.Sc., M.Sc., C. Eng., MICE, MIHT, F.G.S.

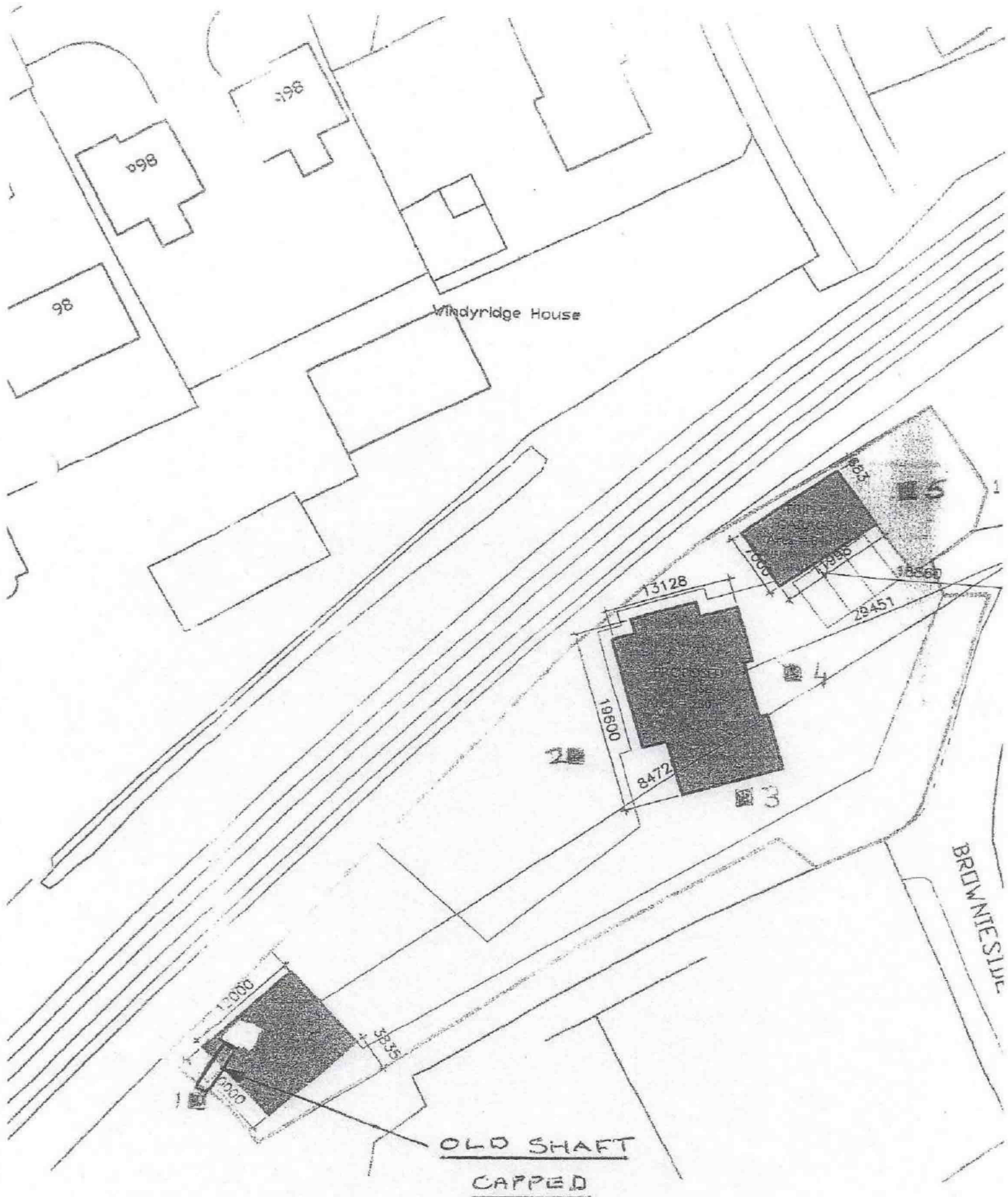
App 8/4

APPENDIX 1

LOGS OF TRIAL PITS EXCAVATED ON 18th MAY 2018

App 8/5

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ing Site Plan 1:500

OLD SHAFT
CAPPED

BRIMNESIDE

NEW BUILD HOUSE for Mr & Mrs G Fraser, Vacant Site, Brimneside Road, Plains, Waikato, N.Z.

ARCHITECTS

PROPOSED SITE PLAN

APP 8/C

Project No: 5037F

SIMPSON MINING & GEOTECHNICAL LTD

TRIAL PIT No 1

Project: Vacant Site Brownieside Road

Location: Plains, Airdrie

Client: Mr & Mrs G Fraser

SUBSURFACE PROFILE			SAMPLE				Lab Data			Shear Strength		Well Data	Remarks	
Elevation	Depth	Description	Symbol	Depth (m)	Type	SPT N-Value	Recovery	φ Angle	NMC (%)	LL (%)	Bulk Density			Hand Vane (kN/m ²)
		0-1.20 Black BLAES, FILL		0.60	D									Sides of Pit Stable No Groundwater encountered
		1.20-1.75 (0.55) Concrete slab, shaft cap. 0.55 metres thick, 6 metres long												
		Bottom of Trial Pit												
-1	1													
-2	2													
-3	3													
-4	4													

Logged By: I. Simpson

Excavation Method: Tracked Excavator

Excavation Date: 18th May 2018

Sheet: 1 of 1

App 8/7

Project No: 5037F

SIMPSON MINING & GEOTECHNICAL LTD

TRIAL PIT No 2

Project: Vacant Site Brownieside Road

Location: Plains, Airdrie

Client: Mr & Mrs G Fraser

SUBSURFACE PROFILE			SAMPLE				Lab Data			Shear Strength		Well Data	Remarks	
Elevation	Depth	Description	Symbol	Depth (m)	Type	SPT N-Value	Recovery	φ Angle	NMC (%)	LL (%)	Bulk Density			Hand Vane (kN/m ²)
	0-0.20 (0.20)	TYPE 1	[Cross-hatched symbol]											Sides of Pit Stable Groundwater encountered on top of clay at 2.20 metres
-1	1			1.00	D									
	0.20-2.20 (2.00)	Black BLAES, FILL	[Cross-hatched symbol]											V: Hand vane test D: Disturbed Sample
-2	2													
	2.20-2.80 (0.60)	Firm, GREY, CLAY	[Horizontal line symbol]									62		
-3	3			2.40	V									
		Bottom of Trial Pit												
-4	4													

Logged By: I. Simpson

Excavation Method: Tracked Excavator

Excavation Date: 18th May 2018

Sheet: 1 of 1

APP 8/3

Project No: 5037F




SIMPSON MINING & GEOTECHNICAL LTD

TRIAL PIT No 3

Project: Vacant Site Brownieside Road

Location: Plains, Airdrie

Client: Mr & Mrs G Fraser

SUBSURFACE PROFILE			SAMPLE				Lab Data			Shear Strength		Well Data	Remarks
Elevation	Description	Symbol	Depth (m)	Type	SPT N-Value	Recovery	φ Angle	NMC (%)	LL (%)	Bulk Density	Hand Vane (kN/m ²)		
0	0-0.20 (0.20) TYPE 1												Sides of Pit Stable Groundwater encountered on top of clay at 2.20 metres
-1	0.20-2.20 (2.00) Black BLAES, FILL		1.00	D									
-2	2.20-3.00 (0.80) Firm, grey, CLAY		2.40	V							50		
-3	Bottom of Trial Pit												V: Hand vane test D: Disturbed Sample
-4													

Logged By: I. Simpson

Excavation Method: Tracked Excavator

Excavation Date: 18th May 2018

Sheet: 1 of 1

Am 8/9

Project No: 5037F

SIMPSON MINING & GEOTECHNICAL LTD

TRIAL PIT No 4

Project: Vacant Site Brownieside Road

Location: Plains, Airdrie

Client: Mr & Mrs G Fraser

SUBSURFACE PROFILE			SAMPLE				Lab Data			Shear Strength		Well Data	Remarks	
Elevation	Depth	Description	Symbol	Depth (m)	Type	SPT N-Value	Recovery	φ Angle	NMC (%)	LL (%)	Bulk Density			Hand Vane (kN/m ²)
-1	1	0-2.90 (2.90) Black BLAES, FILL		1.00	D									
-2	2			2.00	D									
-3	3	2.90-3.00 (0.10) Firm to stiff, dark brown, CLAY Bottom of Trial Pit												
-4	4													

Sides of Pit Stable
Groundwater encountered on top of clay at 2.90 metres

V: Hand vane test
D: Disturbed Sample

Logged By: I. Simpson

Excavation Method: Tracked Excavator

Excavation Date: 18th May 2018

Sheet: 1 of 1

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Project No: 5037F

SIMPSON MINING & GEOTECHNICAL LTD

TRIAL PIT No 5

Project: Vacant Site Brownieside Road

Location: Plains, Airdrie

Client: Mr & Mrs G Fraser

SUBSURFACE PROFILE			SAMPLE				Lab Data			Shear Strength		Remarks			
Elevation	Depth	Description	Symbol	Depth (m)	Type	SPT N-Value	Recovery	φ Angle	NMC (%)	LL (%)	Bulk Density		Hand Vane (kN/m ²)	Apparent Cohesion	Well Data
	0-0.30 (0.30)	TOPSOIL													Sides of Pit Stable Groundwater encountered on top of clay at 2.90 metres
-1	1	0.30-2.60 (2.30) Black BLAES, FILL		1.00	D										
-2	2			2.00	D										
-3	3	2.60-3.00 (0.40) Firm to stiff, dark brown, CLAY													
		Bottom of Trial Pit													V: Hand vane test D: Disturbed Sample
-4	4														

Logged By: I. Simpson

Excavation Method: Tracked Excavator

Excavation Date: 18th May 2018

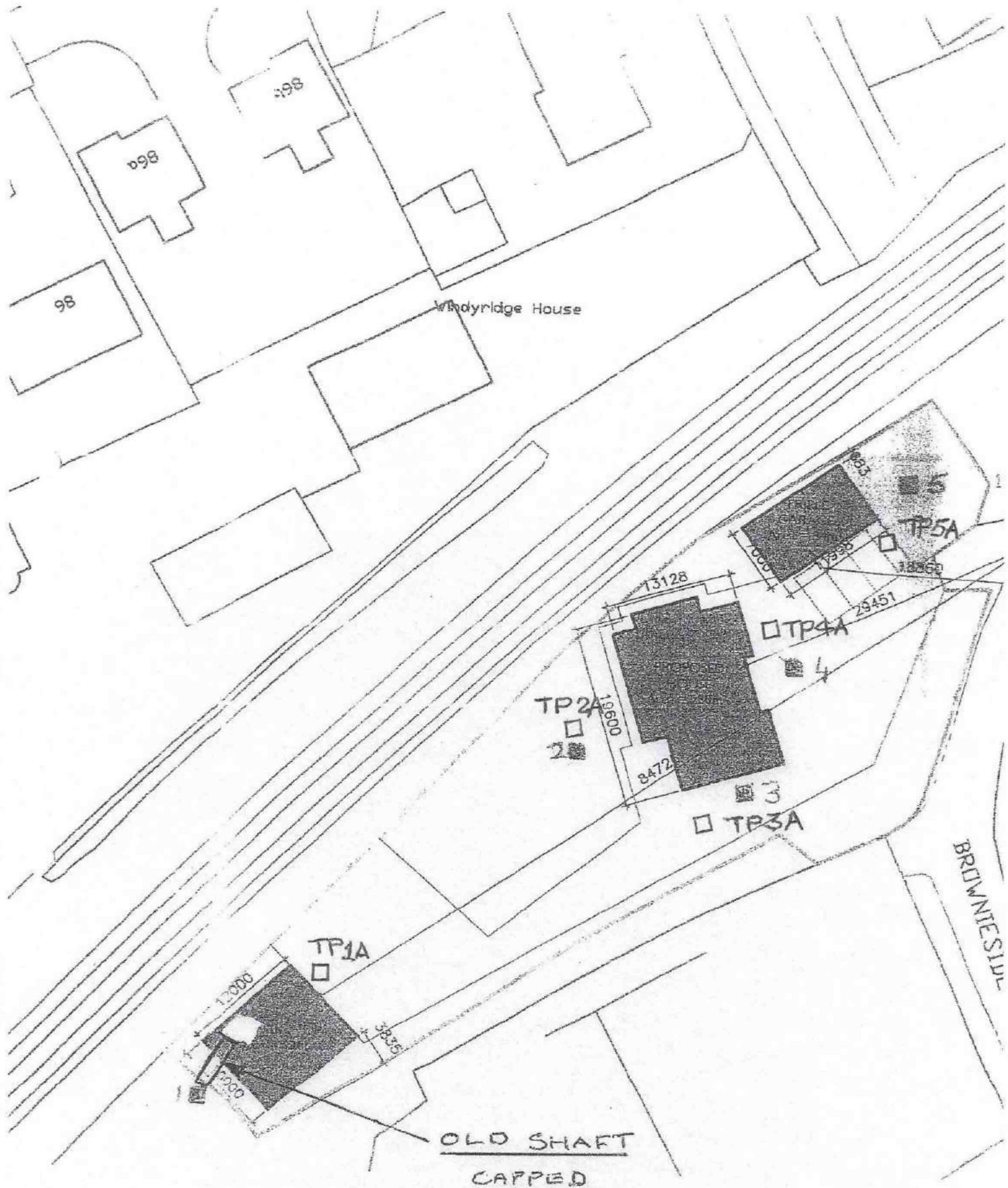
Sheet: 1 of 1

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APPENDIX 2

LOGS OF TRIAL PITS EXCAVATED ON 5th JUNE 2018

App 8/12



Proposed Site Plan 1:500



1000
1000
1000

NEW BUILD HOUSE for Mr & Mrs G Fraser. Vacant Site, Brownsie Road, Plains, Ayrton, ML5 8J

PROPOSED SITE PLAN

Apr 8/13

TRIAL PIT LOGS

TP No 1A

Description	Thickness (metres)	Depth (metres)
BLACK BLAES FILL.	2.00	2.00
Disturbed samples at 0.30, 0.60, 1.00 and 2.00 metres. Sides of pit stable. No groundwater encountered.		

TP No 2A

Description	Thickness (metres)	Depth (metres)
TYPE 1	0.20	0.20
BLACK BLAES FILL.	1.80	2.00
Disturbed samples at 0.30, 0.60, 1.00 and 2.00 metres. Sides of pit stable. No groundwater encountered.		

TP No 3A

Description	Thickness (metres)	Depth (metres)
TYPE 1	0.20	0.20
BLACK BLAES FILL.	1.80	2.00
Disturbed samples at 0.30, 0.60, 1.00 and 2.00 metres. Sides of pit stable. No groundwater encountered.		

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SIMPSON MINING & GEOTECHNICAL LTD
 RESULTS OF CONTAMINATION TESTS ON REPRESENTATIVE SAMPLES
 FROM THE SITE AT BROWNIESIDE PLAINS

TP No 4A

Description	Thickness (metres)	Depth (metres)
BLACK BLAES FILL.	2.00	2.00
Disturbed samples at 0.30, 0.60, 1.00 and 2.00 metres. Sides of pit stable. No groundwater encountered.		

TP No 5A

Description	Thickness (metres)	Depth (metres)
TOPSOIL	0.30	0.30
BLACK BLAES FILL.	1.70	2.00
Disturbed samples at 0.30, 0.60, 1.00 and 2.00 metres. Sides of pit stable. No groundwater encountered.		

Gas readings in all trial pits and background.

OXYGEN	20.90%
CARBON DIOXIDE	0.02%
METHANE	0.00%

All trial pits excavated on 5th June 2018.

APPENDIX 3

RESULTS OF CONTAMINATION TESTS



Certificate of Analysis

Certificate Number: 18/0254
Date of Report: June 24, 2018
Customer: Simpson Mining & Geotechnical Limited
55, Westerlee Drive
Bridge of Allan
Stirling
FK9 4DQ
Contact: Willie Simpson
Customer Reference: Plains
Order Number: none supplied
Job Received: June 5, 2018
Instructions Received: June 6, 2018
Dates of Analysis: June 7 - June 22, 2018

Unless otherwise stated, results relate to samples as received at the Laboratory.

Unless a representative of Caledonian Laboratories Limited was present at the time of sampling, we cannot warrant that samples submitted for analysis are representative of the parent material.

Opinions and interpretations, where given, are outside of the scope of accreditation held by the Laboratory.

This report cannot be reproduced, except in full, without the written permission of the laboratory.

All analysis was carried out using in-house documented Standard Operating Procedures.

Report Written by: J.McKenna
Director

Report Authorised by: J.McKenna
Director

APP 8/17



Certificate of Analysis

Certificate Number: 18/0254
Customer Reference: Plains

Parameter	Method	LOD	units	TP1 (0.6m)	TP3 (0.6m)
				Black Blaes	Fill
				18/0254/01	18/0254/02
Arsenic	HG-AAS	1	mg/kg	2.3	2.9
Cadmium	AAS	1	mg/kg	<1	<1
Chromium	AAS	1	mg/kg	39	22
Chromium VI	AAS	1	mg/kg	<1	<1
Copper	AAS	1	mg/kg	44	34
Nickel	AAS	1	mg/kg	21	9
Zinc	AAS	1	mg/kg	120	67
Lead	AAS	2	mg/kg	60	85
Mercury	CV-AAS	1	mg/kg	<1	<1
Selenium	HG-AAS	1	mg/kg	<1	<1
Water soluble Boron	colorimetry	1	mg/kg	<1	<1
pH	probe	-	units	7.0	6.6
2:1 soluble sulphate	gravimetry	0.01	g/L	0.15	0.12
Monohydric Phenols	colorimetry	1	mg/kg	<1	<1
Free Cyanide	colorimetry	1	mg/kg	<1	<1
TPH - Total	Gc/FID	10	mg/kg	<10	<10
<i>PAH speciation</i>					
Acenaphthene	Gc/FID	1	mg/kg	<1	<1
Acenaphthylene	Gc/FID	1	mg/kg	<1	<1
Anthracene	Gc/FID	1	mg/kg	<1	<1
Benzo(a) Anthracene	Gc/FID	1	mg/kg	<1	<1
Benzo(a) Pyrene	Gc/FID	1	mg/kg	<1	<1
Benzo (b/k) Fluoranthene	Gc/FID	1	mg/kg	<1	<1
Benzo (ghi) Perylene	Gc/FID	1	mg/kg	<1	<1
Chrysene	Gc/FID	1	mg/kg	<1	<1
Dibenzo(ah) anthracene	Gc/FID	1	mg/kg	<1	<1
Fluoranthene	Gc/FID	1	mg/kg	<1	<1
Fluorene	Gc/FID	1	mg/kg	<1	<1
Indeno(123-cd) pyrene	Gc/FID	1	mg/kg	<1	<1
Napthalene	Gc/FID	1	mg/kg	<1	<1
Phenanthrene	Gc/FID	1	mg/kg	<1	<1
Pyrene	Gc/FID	1	mg/kg	<1	<1

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Certificate of Analysis

Certificate Number: 18/0254
Customer Reference: Plains

Parameter	Method	LOD	units	TP1 (0.6m)	TP3 (0.6m)
				Black Blaes	Fill
				18/0254/01	18/0254/02
10:1 Leachable metals					
Arsenic	HG-AAS	0.005	mg/L	<0.005	<0.005
Cadmium	AAS	0.005	mg/L	<0.005	<0.005
Chromium	AAS	0.01	mg/L	0.02	0.02
Copper	AAS	0.01	mg/L	0.04	0.02
Nickel	AAS	0.01	mg/L	<0.01	<0.01
Zinc	AAS	0.01	mg/L	0.08	0.01
Lead	AAS	0.01	mg/L	<0.01	<0.01
Mercury	CV-AAS	0.001	mg/L	<0.001	<0.001
Selenium	HG-AAS	0.005	mg/L	<0.005	<0.005

Parameter	Method	LOD	units	TP1 (0.6m)	TP3 (0.6m)
				Black Blaes	Fill
				18/0254/01	18/0254/02
Asbestos	Vis/Micro	n/a	qual	not detected	not detected

Note:

All asbestos analysis carried out by an approved UKAS Accredited subcontractor

Abbreviations

- PAH: Total Polynuclear Aromatic Hydrocarbons (USEPA 16 list)
- TPH: Total Petroleum Hydrocarbons (C8-C35)
- AAS: Atomic Absorption Spectrophotometry
- HG-AAS: Hydride Generation Atomic Absorption Spectrophotometry
- CV-AAS: Cold Vapour Atomic Absorption Spectrophotometry
- Gc/FID: Gas Chromatography with Flame Ionisation Detection.

Qual.: Qualitative analysis only

App 8/19



Certificate of Analysis

Certificate Number: 18/0319
Date of Report: July 19, 2018
Customer: Simpson Mining & Geotechnical Limited
55, Westerlee Drive
Bridge of Allan
Stirling
FK9 4DQ
Contact: Willie Simpson
Customer Reference: Plains
Order Number: none supplied
Job Received: July 18, 2018
Instructions Received: July 18, 2018
Dates of Analysis: July 18 - July 19, 2018

Unless otherwise stated, results relate to samples as received at the Laboratory.

Unless a representative of Caledonian Laboratories Limited was present at the time of sampling, we cannot warrant that samples submitted for analysis are representative of the parent material.

Opinions and interpretations, where given, are outside of the scope of accreditation held by the Laboratory.

This report cannot be reproduced, except in full, without the written permission of the laboratory.

All analysis was carried out using in-house documented Standard Operating Procedures.

Report Written by: J. McKenna
Director

Report Authorised by: J. McKenna
Director

AW 8/20



Certificate of Analysis

Certificate Number: 18/0319

Customer Reference: Plains

				TP1 (0.6m)
				Black Blaes
Parameter	Method	LOD	units	18/0319/01
Loss on Ignition	gravimetry	0.1	%	0.7

App 8/20

APPENDIX 4

SUMMARY OF RESULTS

SIMPSON MINING & GEOTECHNICAL LTD
 RESULTS OF CONTAMINATION TESTS ON REPRESENTATIVE SAMPLES
 FROM THE SITE AT BROWNSIDE PLAINS

Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use

Determined	Units	GAC	N	MC	Loc off Ex	Pathway	Assessment
Arsenic	mg/kg	37	2	2.9	N/A	1	No Further Action
Cadmium	mg/kg	11	2	<1	N/A	1	No Further Action
Chromium(VI)	mg/kg	6	2	<1	N/A	1	No Further Action
Lead	mg/kg	210	2	85	N/A	1	No Further Action
Mercury	mg/kg	40	2	<1	N/A	2	No Further Action
Nickel	mg/kg	130	2	21	N/A	1	No Further Action
Selenium	mg/kg	250	2	<1	N/A	1	No Further Action
Copper	mg/kg	2400	2	44	N/A	1	No Further Action
Zinc	mg/kg	3700	2	120	N/A	1	No Further Action
Cyanide – Total	mg/kg	791	2	<1	N/A	1	No Further Action
Phenols - Total	mg/kg	280	2	<1	N/A	1	No Further Action
Naphthalene	mg/kg	1.5	2	<1	N/A	2	No Further Action
Acenaphthylene	mg/kg	170	2	<1	N/A	3	No Further Action
Acenaphthene	mg/kg	210	2	<1	N/A	1	No Further Action
Fluorene	mg/kg	160	2	<1	N/A	1	No Further Action
Phenanthrene	mg/kg	92	2	<1	N/A	3	No Further Action
Anthracene	mg/kg	2300	2	<1	N/A	3	No Further Action
Fluoranthene	mg/kg	260	2	<1	N/A	3	No Further Action
Pyrene	mg/kg	560	2	<1	N/A	3	No Further Action
Benzo(a)Anthracene	mg/kg	3.1	2	<1	N/A	3	No Further Action
Chrysene	mg/kg	6	2	<1	N/A	3	No Further Action
Benzo(b/k)Fluoranthene	mg/kg	5.6	2	<1	N/A	3	No Further Action
Benzo(a)Pyrene	mg/kg	0.83	2	<1	N/A	3	No Further Action
Indeno(123-cd)Pyrene	mg/kg	3.2	2	<1	N/A	3	No Further Action
Dibenzo(a)Anthracene	mg/kg	0.76	2	<1	N/A	3	No Further Action
Benzo(ghi)Perylene	mg/kg	44	2	<1	N/A	3	No Further Action
TPH C8-C10 (aliphatic)	mg/kg	19	2	<10	N/A	3	No Further Action
TPH C10-C12 (aromatic)	mg/kg	69	2	<10	N/A	3	No Further Action
TPH C12-C16 (aromatic)	mg/kg	140	2	<10	N/A	3	No Further Action
TPH C17-C21 (aromatic)	mg/kg	250	2	<10	N/A	3	No Further Action
TPH C22-C35 (aromatic)	mg/kg	890	2	<10	N/A	3	No Further Action

Notes

Main Exposure Pathways: 1 = Soil Ingestion, 2 = Vapour Inhalation (Indoor), 3 = Dermal Contact & Ingestion, 4 = Dust Inhalation.

Abbreviations: GAC – General Assessment Criteria, N = number of samples, ME = Maximum Exceedance Concentration, , Loc of Ex = Location of Exceedances, MC = Maximum Concentration.

* The Tier 1 GAC for the hydrocarbon fraction is derived from CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. SMG has utilised the Tier 1 values for aliphatic for the volatile and semi volatile fractions (C5-C12) and the Tier 1 values for aromatic compounds for the non volatile fractions (C12-C35). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.

(i) Benzo(b) Fluoranthene (100mg/kg) Benzo(k) Fluoranthene (140mg/kg)

(ii) GAC based on human health criteria. Ecotoxicological assessment will be made using EA guidance (EPR 8.01) on soil Spreading (Cu 135mg/kg, Zinc 200mg/kg, Pb 300mg/kg)

The results of this direct comparison indicates that the data does not exceed any of the screening criteria for a residential end use.

SIMPSON MINING & GEOTECHNICAL LTD
RESULTS OF CONTAMINATION TESTS ON REPRESENTATIVE SAMPLES
FROM THE SITE AT BROWNIESIDE PLAINS

12/08/24

APPENDIX 5

RISK ASSESSMENT VALUES

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Guideline Levels (Residential End-Use with Gardens, 2.5 % SOM*)

Contaminant	Effect	SVG/GSV/SS V (mg/kg)	Source
Arsenic	Toxic	37	LQM/CI EH S4ULS (2015)
Mercury (Inorganic)	Toxic	40	LQM/CI EH S4ULS (2015)
Boron	Toxic	290	LQM/CI EH S4ULS (2015)
Chromium III	Toxic	910	LQM/CI EH S4ULS (2015)
Chromium VI	Toxic	6	LQM/CI EH S4ULS (2015)
Lead	Toxic	210	C4SL (DEFRA SP1010) (2014)
Cadmium	Toxic	11	LQM/CI EH S4ULS (2015)
Selenium	Toxic	250	LQM/CI EH S4ULS (2015)
Nickel	Toxic	130	LQM/CI EH S4ULS (2015)
Nickel	Phytotoxic	110	BS:3882 (2015)
Copper	Toxic	2400	LQM/CI EH S4ULS (2015)
Copper	Phytotoxic	200	BS:3882 (2015)
Zinc	Toxic	3700	LQM/CI EH S4ULS (2015)
Zinc	Phytotoxic	300	BS:3882 (2015)
Total Sulphate	Phytotoxic	10,000	ICRCL/SAC
Phenol	Toxic	280	LQM/CI EH S4ULS (2015)
Total Petroleum Hydrocarbons (TPH)			
Aliphatic C5-C6	Toxic	78	LQM/CI EH S4ULS (2015)
Aliphatic C6-C8	Toxic	230	LQM/CI EH S4ULS (2015)
Aliphatic C8-C10	Toxic	65	LQM/CI EH S4ULS (2015)
Aliphatic C10-C12	Toxic	330	LQM/CI EH S4ULS (2015)
Aliphatic C12-C16	Toxic	2,400	LQM/CI EH S4ULS (2015)
Aliphatic C16-C21	Toxic	92,000	LQM/CI EH S4ULS (2015)
Aliphatic C21-C35	Toxic	92,000	LQM/CI EH S4ULS (2015)
Aromatic C5-C7	Toxic	140	LQM/CI EH S4ULS (2015)
Aromatic C7-C8	Toxic	290	LQM/CI EH S4ULS (2015)
Aromatic C8-C10	Toxic	83	LQM/CI EH S4ULS (2015)
Aromatic C10-C12	Toxic	180	LQM/CI EH S4ULS (2015)
Aromatic C12-C16	Toxic	330	LQM/CI EH S4ULS (2015)
Aromatic C16-C21	Toxic	540	LQM/CI EH S4ULS (2015)
Aromatic C21-C35		1,500	LQM/CI EH S4ULS (2015)
Polycyclic Aromatic Hydrocarbons (PAH)			
Napthalene	Toxic	5.6	LQM/CI EH S4ULS (2015)
Acenaphthylene	Toxic	420	LQM/CI EH S4ULS (2015)
Acenaphthene	Toxic	510	LQM/CI EH S4ULS (2015)
Fluorene	Toxic	400	LQM/CI EH S4ULS (2015)
Phenanthrene	Toxic	220	LQM/CI EH S4ULS (2015)
Anthracene	Toxic	5,400	LQM/CI EH S4ULS (2015)
Fluoranthene	Toxic	560	LQM/CI EH S4ULS (2015)
Pyrene	Toxic	1,200	LQM/CI EH S4ULS (2015)
Benzo(a)Anthracene	Toxic	11	LQM/CI EH S4ULS (2015)
Chrysene	Toxic	22	LQM/CI EH S4ULS (2015)
Benzo(b)Fluoranthene	Toxic	3.3	LQM/CI EH S4ULS (2015)
Benzo(k)Fluoranthene	Toxic	93	LQM/CI EH S4ULS (2015)
Benzo(a)Pyrene	Toxic	2.7	LQM/CI EH S4ULS (2015)
Indeno(123-cd)Pyrene	Toxic	36	LQM/CI EH S4ULS (2015)
Dibenzo(a)Anthracene	Toxic	0.28	LQM/CI EH S4ULS (2015)
Benzo(g,h,i)Perylene	Toxic	340	LQM/CI EH S4ULS (2015)
Asbestos			
Asbestos	Toxic	Detection	HSE

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ORIGIN OF GROUND WATER RISK ASSESSMENT VALUES.

Parameter	Method	LOD	Units	RPV	Authority
10.1 Leachable metals.					
Arsenic	HG-AAS	0.005	mg/L	0.01	1
Cadmium	AAS	0.005	mg/L	0.10	2
Chromium)	AAS	0.01	mg/L	0.05	1
Copper	AAS	0.01	mg/L	2	3
Nickel	AAS	0.01	mg/L	0.02	1
Zinc	AAS	0.01	mg/L	5	3
Lead	AAS	0.01	mg/L	0.125	1
Mercury	CV-AAS	0.001	mg/L	0.01	2
Selenium	HG-AAS	0.005	mg/L	0.01	1

Authority:

- 1 - SEPA Position Statement WAT - PS - 10 - 01 Table 6.
- 2 - SEPA Position Statement WAT - PS - 10 - 01 Table 4.
- 3 - Drinking Water Guideline.

Abbreviations:

- AAS : Atomic Absorption Spectrophotometry.
- HG-AAS : Hydride Generation Atomic Absorption Spectrophotometry.
- CV-AAS : Cold Vapour Atomic Absorption Spectrophotometry.
- RPV : Resource Protection Value

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