

Unit D2 & D5

9 Quantum Road

Firgrove Business Park

Somerset West

7130

South Africa

W: www.element.com

Vissershok Landfill
Off N7, Frankdale Road
Near Ocean view
Cape Town
Western Cape
South Africa
7441





Attention: Maree Cockcroft

Date: 18th September, 2020

Your reference: 200676

Our reference: Test Report 20/633 Batch 1

Location: Stellenbosch Municipality

Date samples received : 31st August, 2020

Status: Final report

Issue:

One sample were received for analysis on 31st August, 2020 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Analysis was undertaken at either Element Materials Technology UK, which is ISO 17025 accredited under UKAS (4225) or Element Materials Technology (SA) which is ISO 17025 accredited under SANAS (T0729) or a subcontract laboratory where specified.

NOTE: Under International Laboratory Accreditation Cooperation (ILAC), ISO 17025 (UKAS) accreditation is recognised as equivalent to SANAS (South Africa) accreditation.

Authorised By:

Debbie van Wyk

Organics Laboratory:

Greg Ondrejkovic

Technical Supervisor

Inorganics Laboratory:

Greg Ondrejkovic

Technical Supervisor

Please include all sections of this report if it is reproduced

Client Name: Vissershok Landfill

Reference: 200676

Location:

Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report : Solid

EMT Job No:	20/633											
EMT Sample No.	1-2											
Sample ID	Contaminated soil											
Depth												
COC No / misc							Please see attached notes for a abbreviations and acronyms					
Containers												
Sample Date												
Sample Type												
Batch Number	1											
							LOD/LOR	Units	Method No.			
Date of Receipt Antimony*	2						<1	mg/kg	UK_TM30/UK_PM15			
Arsenic*	13.8						<0.5	mg/kg	UK_TM30/UK_PM15			
Barium*	356						<1	mg/kg	UK_TM30/UK_PM15			
Cadmium*	3.2						<0.1	mg/kg	UK_TM30/UK_PM15			
Chromium*	30.1						<0.5	mg/kg	UK_TM30/UK_PM15			
Cobalt*	128.0						<0.5	mg/kg	UK_TM30/UK_PM15			
Copper*	288 _{AA}						<1	mg/kg	UK_TM30/UK_PM15			
Lead*	105						<5	mg/kg	UK_TM30/UK_PM15			
Manganese*	265						<1	mg/kg	UK_TM30/UK_PM15			
Mercury*	10.3						<0.1	mg/kg	UK_TM30/UK_PM15			
Molybdenum*	4.4						<0.1	mg/kg	UK_TM30/UK_PM15			
Nickel*	117.9						<0.7	mg/kg	UK_TM30/UK_PM15			
Selenium*	9						<1	mg/kg	UK_TM30/UK_PM15			
Vanadium*	22						<1	mg/kg	UK_TM30/UK_PM15			
Boron (Aqua Regia Soluble)*	17.42						<0.25	mg/kg	UK_TM30/UK_PM15			
Zinc*	764						<5	mg/kg	UK_TM30/UK_PM15			
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Client Name: Vissershok Landfill

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report : Solid

		 	 	 	 	 _						
EMT Sample No.	1-2					1						
Sample ID	Contaminated soil											
Depth						Please se	o attached n	otos for all				
COC No / misc						Please see attached notes for a abbreviations and acronyms						
Containers	JΤ					Ì						
Sample Date	<>					Ì						
Sample Type	Soil											
Batch Number	1											
						LOD/LOR	Units	Method No.				
Date of Receipt	31/08/2020											
VOC MS Methyl Tertiary Butyl Ether	<2					<2	ug/kg	SA_TM15/SA_PM10				
Vinyl Chloride	<2					<2	ug/kg ug/kg	SA_TM15/SA_PM10				
1,1-Dichloroethene (1,1 DCE) SA	<6					<6	ug/kg	SA_TM15/SA_PM10				
Dichloromethane (DCM) SA	<30					<30	ug/kg	SA_TM15/SA_PM10				
Chloroform SA	<3					<3	ug/kg ug/kg	SA_TM15/SA_PM10				
1,1,1-Trichloroethane ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
Carbon tetrachloride ^{SA}	<4					<4	ug/kg	SA_TM15/SA_PM10				
1,2-Dichloroethane ^{SA}	<4					<4	ug/kg	SA_TM15/SA_PM10				
Benzene ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
Trichloroethene (TCE) SA	<3					<3	ug/kg	SA_TM15/SA_PM10				
Toluene ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
1,1,2-Trichloroethane ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
Tetrachloroethene (PCE) SA	<3					<3	ug/kg	SA_TM15/SA_PM10				
Chlorobenzene ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
1,1,1,2-Tetrachloroethane ^{sa}	<3					<3	ug/kg	SA_TM15/SA_PM10				
Ethylbenzene ^{SA}	<3					<3	ug/kg	SA_TM15/SA_PM10				
Xylenes (sum of isomers)	<8					<8	ug/kg	SA_TM15/SA_PM10				
Styrene	<3					<3	ug/kg	SA_TM15/SA_PM10				
1,1,2,2-Tetrachloroethane	<3					<3	ug/kg	SA_TM15/SA_PM10				
1,4-Dichlorobenzene ^{SA}	<4					<4	ug/kg	SA_TM15/SA_PM10				
1,2-Dichlorobenzene ^{SA}	<4					<4	ug/kg	SA_TM15/SA_PM10				
1,2-Dichloroethene (cis & trans)	<6					<6	ug/kg	SA_TM15/SA_PM10				
Trichlorobenzenes (1,2,3 & 1,2,4)	<14					<14	ug/kg	SA_TM15/SA_PM10				
Methyl Ethyl Ketone (MEK)	<100					<100	ug/kg	SA_TM15/SA_PM10				
Surrogate Recovery Toluene D8	60					<0	%	SA_TM15/SA_PM10				
Surrogate Recovery 4-Bromofluorobenzene	43 ^{sv}					<0	%	SA_TM15/SA_PM10				
SVOC MS												
Phenois	-40					-40						
2-Chlorophenol SA	<10					<10	ug/kg	SA_TM16/SA_PM8 SA_TM16/SA_PM8				
2,4-Dichlorophenol ^{SA} 2,4,6-Trichlorophenol ^{SA}	<10 <10					<10	ug/kg	SA_TM16/SA_PM8 SA_TM16/SA_PM8				
PAHs	<10					<10	ug/kg	SA_IMID/SA_PMO				
Benzo(a)pyrene ^{SA}	<10					<10	ug/kg	SA_TM16/SA_PM8				
PAH 16 Total	<160					<160	ug/kg	SA_TM16/SA_PM8				
Phthalates	.100					1,00	~g/ng					
Bis(2-ethylhexyl) phthalate ^{SA}	156					<100	ug/kg	SA_TM16/SA_PM8				
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Client Name: Vissershok Landfill

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report : Solid

	20/000							
EMT Sample No.	1-2							
Sample ID	Contaminated soil							
Depth						Please se	e attached n	otes for all
COC No / misc							ations and a	
Containers	JT							
Sample Date	<>							
Sample Type	Soil							
Batch Number	1							Matteria
Date of Receipt	31/08/2020					LOD/LOR	Units	Method No.
SVOC MS								
Other SVOCs								
2,4-Dinitrotoluene ^{SA}	<10					<10	ug/kg	SA_TM16/SA_PM8
Hexachlorobutadiene ^{SA}	<10 ⁺					<10	ug/kg	SA_TM16/SA_PM8
Nitrobenzene ^{SA}	<10					<10	ug/kg	SA_TM16/SA_PM8
Surrogate Recovery 2-Fluorobiphenyl	78					<0	%	SA_TM16/SA_PM8
Surrogate Recovery p-Terphenyl-d14	80					<0	%	SA_TM16/SA_PM8
Pesticides								
Organochlorine Pesticides								
Aldrin	<10					<10	ug/kg	SA_TM42/SA_PM8
cis-Chlordane	<10					<10	ug/kg	SA_TM42/SA_PM8
Dieldrin	<10					<10	ug/kg	SA_TM42/SA_PM8
Heptachlor	<10					<10	ug/kg	SA_TM42/SA_PM8
o,p'-DDE	<10					<10	ug/kg	SA_TM42/SA_PM8
o,p'-DDT	<10					<10	ug/kg	SA_TM42/SA_PM8
o,p'-TDE	<10					<10	ug/kg	SA_TM42/SA_PM8
p,p'-DDE	<10					<10	ug/kg	SA_TM42/SA_PM8
p,p'-DDT	<10					<10	ug/kg	SA_TM42/SA_PM8
p,p'-TDE	<10					<10	ug/kg	SA_TM42/SA_PM8
DDE (o,p & p,p)	<20					<20	ug/kg	SA_TM42/SA_PM8
DDT (o,p & p,p)	<20					<20	ug/kg	SA_TM42/SA_PM8
TDE (o,p & p,p)	<20					<20	ug/kg	SA_TM42/SA_PM8
trans-Chlordane	<10					<10	ug/kg	SA_TM42/SA_PM8
Chlordane (cis & trans)	<20					<20	ug/kg	SA_TM42/SA_PM8
							_	
2,4-D	<100					<100	ug/kg	SA_TM42/SA_PM8
EPH (C10-C36)	1539					<10	mg/kg	SA_TM5/SA_PM8
2111 (010 000)	1000					-10	mgrkg	
GRO (C6-C9)	<0.1					<0.1	mg/kg	SA_TM36/SA_PM12
, ,,							5.5	-
PCBs (Total vs Aroclor 1254)	<10					<10	ug/kg	SA_TM17/SA_PM8
							3' 3	
Total Phenols HPLC*	<0.15					<0.15	mg/kg	UK_TM26/UK_PM21
Natural Moisture Content	41.6					<0.1	%	SA_PM4/SA_PM0
Moisture Content (% Wet Weight)	29.4					<0.1	%	SA_PM4/SA_PM0
Fluoride	<0.3					<0.3	mg/kg	SA_TM27/SA_PM20
Hexavalent Chromium*	<6.0 _{AB}					<0.3	mg/kg	UK_TM38/UK_PM20
	_							
Total Cyanide*	5.3					<0.5	mg/kg	UK_TM89/UK_PM45

Client Name: Vissershok Landfill

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report : Solid

LINI JOB NO.	20/000						 			_					
EMT Sample No.	1-2														
Sample ID	Contaminated soil														
Depth										Please se	e attached n	otes for all			
COC No / misc										abbrevi	ations and ad	ronyms			
Containers	JT														
Sample Date															
Sample Type															
Batch Number										LOD/LOR	Units	Method No.			
Date of Receipt Formaldehyde (water soluble)	31/08/2020 <2									<2	mg/kg	SA_TM51/SA_PM112			
Tomladenyde (water soluble)	~2									12	mg/kg				
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Client Name: Vissershok Landfill

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report: ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No. Sample ID Depth Please see attached notes for all abbreviations and acronyms COC No / misc Containers JΤ Sample Date Sample Type Batch Number Method LOD/LOR Units No. Date of Receipt 31/08/2020 Dissolved Antimony <2 ug/l UK_TM30/UK_PM Dissolved Arsenic <2.5 <2.5 ug/l Dissolved Barium 155 <3 ug/l Dissolved Boron 122 <12 ug/l Dissolved Cadmium <0.5 <0.5 ug/l Dissolved Chromium 2.5 <1.5 ug/l Dissolved Cobalt <2 <2 ug/l Dissolved Copper 16 <7 ug/l Dissolved Lead <5 <5 ug/l Dissolved Manganese 18 <2 ug/l Dissolved Mercury <1 <1 ug/l Dissolved Molybdenum <2 <2 ug/l Dissolved Nickel <2 <2 ua/l Dissolved Selenium <3 <3 ua/l Dissolved Vanadium 10.7 <1.5 ua/l Dissolved Zinc 95 <3 ug/l EPH (C10-C36) <10 <10 ug/l GRO (C6-C9) <10 <10 ug/l

Client Name: Vissershok Landfill

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No: 20/633

Report: ASLP (20:1)-Acetate pH 5 or 2.9

EMT Job No:	20/633	 					 	 _		
EMT Sample No.	1-2							1		
Sample ID	Contaminated soil									
Depth								Diagram		-4 6!!
COC No / misc									e attached nations and a	
Containers	JT							Ì		
Sample Date	<>							Ì		
Sample Type	Soil									
Batch Number	1							LOD/LOR	Units	Method No.
Date of Receipt	31/08/2020									
VOC MS	.0.4							.0.4		
Methyl Tertiary Butyl Ether Vinyl Chloride	<0.1 <0.1							<0.1 <0.1	ug/l	SA_TM15/SA_PM88 SA_TM15/SA_PM88
1,1-Dichloroethene (1,1 DCE)	<3							<3	ug/l ug/l	SA_TM15/SA_PM88
Dichloromethane (DCM)	<5 <5							<5 <5	ug/l	SA_TM15/SA_PM88
Chloroform	<2							<2	ug/l	SA_TM15/SA_PM88
1,1,1-Trichloroethane	<2							<2	ug/l	SA_TM15/SA_PM88
Carbon tetrachloride	<2							<2	ug/l	SA_TM15/SA_PM88
1,2-Dichloroethane	<2							<2	ug/l	SA_TM15/SA_PM88
Benzene	<0.5							<0.5	ug/l	SA_TM15/SA_PM88
Trichloroethene (TCE)	<3							<3	ug/l	SA_TM15/SA_PM88
Toluene	<5							<5	ug/l	SA_TM15/SA_PM88
1,1,2-Trichloroethane	<2							<2	ug/l	SA_TM15/SA_PM88
Tetrachloroethene (PCE)	<3							<3	ug/l	SA_TM15/SA_PM88
Chlorobenzene	<2							<2	ug/l	SA_TM15/SA_PM88
1,1,1,2-Tetrachloroethane	<2							<2	ug/l	SA_TM15/SA_PM88
Ethylbenzene	<1							<1	ug/l	SA_TM15/SA_PM88
Xylenes (sum of isomers)	<3							<3	ug/l	SA_TM15/SA_PM88
Styrene	<2							<2	ug/l	SA_TM15/SA_PM88
1,1,2,2-Tetrachloroethane	<4							<4	ug/l	SA_TM15/SA_PM88
1,4-Dichlorobenzene	<3							<3	ug/l	SA_TM15/SA_PM88
1,2-Dichlorobenzene	<3							<3	ug/l	SA_TM15/SA_PM88
1,2-Dichloroethene (cis & trans)	<6							<6	ug/l	SA_TM15/SA_PM88
Trichlorobenzenes (1,2,3 & 1,2,4) Methyl Ethyl Ketone (MEK)	<6 <100							<6 <100	ug/l	SA_TM15/SA_PM88 SA_TM15/SA_PM88
Toluene-D8	115							<0	ug/l %	SA_TM15/SA_PM88
4-Bromofluorobenzene	115							<0	%	SA_TM15/SA_PM88
. Bromonacroponizono									,,,	
SVOC MS										
Phenois										
2-Chlorophenol	<1							<1	ug/l	SA_TM16/SA_PM30
2,4-Dichlorophenol	<0.5							<0.5	ug/l	SA_TM16/SA_PM30
2,4,6-Trichlorophenol	<1							<1	ug/l	SA_TM16/SA_PM30
PAHs										
Benzo(a)pyrene	<1							<1	ug/l	SA_TM16/SA_PM30
PAH 16 Total	<11							<11	ug/l	SA_TM16/SA_PM30
Phthalates										
Bis(2-ethylhexyl) phthalate	<5							<5	ug/l	SA_TM16/SA_PM30
			<u> </u>	<u> </u>	<u> </u>	<u> </u>				

Client Name: Vissershok Landfill

200676 Reference:

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

20/633 EMT Job No: EMT Sample No.

Report: ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Sample ID

	soil							
Depth						Please se	e attached n	otes for all
COC No / misc							ations and a	
Containers	JТ							
Sample Date	<>							
Sample Type	Soil							
Batch Number	1					LOD/LOR	Units	Method No.
Date of Receipt	31/08/2020							
SVOC MS								
Other SVOCs								
2,4-Dinitrotoluene	<0.5					<0.5	ug/l	SA_TM16/SA_PM30
Hexachlorobutadiene	<1					<1	ug/l	SA_TM16/SA_PM30
Nitrobenzene	<1					<1	ug/l	SA_TM16/SA_PM30
Surrogate Recovery 2-Fluorobiphenyl	89					<0	%	SA_TM16/SA_PM30
Surrogate Recovery p-Terphenyl-d14	85					<0	%	SA_TM16/SA_PM30
PCBs (Total vs Aroclor 1254)	<0.2					<0.2	ug/l	SA_TM17/SA_PM30
Total Phenols HPLC*	<0.15					<0.15	mg/l	UK_TM26/UK_PM0
Sulphate as SO4*	<0.5					<0.5	mg/l	UK_TM38/UK_PM0
Chloride*	7.9					<0.3	mg/l	UK_TM38/UK_PM0
Hexavalent Chromium*	<0.006					<0.006	mg/l	UK_TM38/UK_PM0
Nitrate as N*	10.62					<0.05	mg/l	UK_TM38/UK_PM0
Fluoride*	<0.3					<0.3	mg/l	UK_TM173/UK_PM0
Total Cyanide*	<0.01					<0.01	mg/l	UK_TM89/UK_PM0
Pesticides								
Organochlorine Pesticides								
Aldrin	<10					<10	ug/l	SA_TM42/SA_PM30
Dieldrin	<10					<10	ug/l	SA_TM42/SA_PM30
Heptachlor	<10					<10	ug/l	SA_TM42/SA_PM30
DDE (o,p & p,p)	<20					<20	ug/l	SA_TM42/SA_PM30
DDT (o,p & p,p)	<20					<20	ug/l	SA_TM42/SA_PM30 SA_TM42/SA_PM30
TDE (o,p & p,p) Chlordane (cis & trans)	<20 <20					<20 <20	ug/l ug/l	SA_TM42/SA_PM30
Chlordane (cis & trans)	\2 0					~20	ug/i	3A_1W42/3A_FM30
2,4-D	<30					<30	ug/l	SA_TM42/SA_PM30
							J	
pH of leaching fluid	5.0					<	pH units	NONE/SA_PM80
pH of leaching fluid	5.0						pH units	NONE/SA_PM88
Formaldehyde	<0.5					<0.5	mg/l	SA_TM51/SA_PM0
Total Dissolved Solids	5683					<35	mg/l	SA_TM20/SA_PM80

Notification of Deviating Samples

Client Name: Vissershok Landfill Matrix : Solid

Reference: 200676

Location: Stellenbosch Municipality

Contact: Maree Cockcroft

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
20/633	1	Contaminated soil		1-2	All analyses	No sampling date given

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/633

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCI (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is guoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

EMT Job No.: 20/633

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
В	Indicates analyte found in associated method blank.
DR	Dilution required.
М	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
СО	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
ТВ	Trip Blank Sample
ос	Outside Calibration Range
AA	x5 Dilution

AB x20 Dilution

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	SA_PM80	A 20:1 ratio of leaching fluid to as received soil, is leached for 18 hours. The client can choose to use any of the following leaching fluids a) deionised water b) pH5 c) pH 5/pH2.9 depending on pH of sample d) pH9.2			AR	No
NONE	No Method Code	SA_PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.				No
SA_PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	SA_PM0	No preparation is required.			AR	
SA_TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds by Headspace GC-MS.	SA_PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
SA_TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds by Headspace GC-MS.	SA_PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
SA_TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds by Headspace GC-MS.	SA_PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.			AR	No
SA_TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	SA_PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
SA_TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	SA_PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
SA_TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	SA_PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
SA_TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	SA_PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
SA_TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	SA_PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
SA_TM20	Modified BS 1377-3: 1990 Gravimetric determination of Total Dissolved Solids	SA_PM80	A 20:1 ratio of leaching fluid to as received soil, is leached for 18 hours. The client can choose to use any of the following leaching fluids a) deionised water b) pH5 c) pH 5/pH2.9 depending on pH of sample d) pH9.2			AR	No
SA_TM27	Major ions by Ion Chromatography	SA_PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a orbital shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a orbital shaker.			AD	Yes
SA_TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12, MTBE and BTEX by headspace GC-FID.	SA_PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
SA_TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12, MTBE and BTEX by headspace GC-FID.	SA_PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.			AR	No
SA_TM42	Modified US EPA method 8270. Pesticides and herbicides by GC-MS	SA_PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	
SA_TM42	Modified US EPA method 8270. Pesticides and herbicides by GC-MS	SA_PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
SA_TM42	Modified US EPA method 8270. Pesticides and herbicides by GC-MS	SA_PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
SA_TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	SA_PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
SA_TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	SA_PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
SA_TM51	Formaldehyde determination by reaction with Ammonium lons and acetylacetone which is analysed spectrophotometrically.	SA_PM0	No preparation is required.				
SA_TM51	Formaldehyde determination by reaction with Ammonium lons and acetylacetone which is analysed spectrophotometrically.	SA_PM112	As received soils are extracted with deionised water in a 4:1 ratio			AR	Yes
UK_TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	UK_PM0	No preparation is required.				No
UK_TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	UK_PM0	No preparation is required.				No
UK_TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	UK_PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.				Yes
UK_TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	UK_PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				No
UK_TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	UK_PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.				Yes
UK_TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	UK_PM0	No preparation is required.				No
UK_TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	UK_PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.				Yes
UK_TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	UK_PM0	No preparation is required.				No

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
UK_TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	UK_PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.				Yes