

## CONSULTANTS IN ENGINEERING, **ENVIRONMENTAL SCIENCE & PLANNING**

# **KILKENNY HISTORIC LANDFILLS**

**TIER 3 RISK ASSESSMENT** .1LKE,

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**Prepared for: Kilkenny County Council** 



Date: August 2020

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# **TIER 3 RISK ASSESSMENT** HISTORIC LANDFILL AT OLDCOURT, CO. KILKENNY

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Environmental Risk Assessment, site investigation, waste, leachate, remediation. **Keywords:** 

Abstract: This report presents the findings of a Tier 3 risk assessment carried out on the Oldcourt Historic

> Landfill site, Co. Kilkenny, prepared in accordance with the EPA Code of Practice for unregulated landfill sites. The Tier 3 risk assessment was conducted following recommendations made in an

earlier Tier 2 risk assessment.

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## 1. INTRODUCTION

### 1.1 Overview

Fehily Timoney and Company (FT) was appointed by Kilkenny County Council to carry out and prepare a Tier 3 risk assessment for Oldcourt Historical landfill located east of the town of Inistioge, Co. Kilkenny. This Tier 3 makes reference to the:

- Tier 1 Risk Assessment, Kilkenny County Council.
- Tier 2 Risk Assessment and Site investigation , Fehily Timoney and Company, 2019.

All FT risk assessments were carried out in accordance with the Environmental Protection Agency (EPA) Code of practice (CoP) - Environmental Risk Assessment for Unregulated Waste Disposal Sites guidance document.

### 1.2 Tier 1 Risk Classification

Kilkenny County Council initially prepared a Tier 1 risk assessment. This risk assessment determined that the site was a **medium (Class B) risk** to the receiving environment. Applying the EPA risk assessment tool as per the EPA CoP for Unregulated Waste Disposal Sites, yielded risk scores of 50% for source-pathway-receptors (SPR) linkage SPR8. All other SPR linkages were calculated to be of low risk. A summary of the risks is presented below in Table 1-1.

Table 1-1 normalised scores for Tier 1 assessment have been provided for reference purposes to reflect records as per the current (2020) EPA Section 22 register.

Table 1-1: Tier 1 SPR Linkages

SPR No.	Linkage	Normalised Score	Justification
Leachate mig	ration through co	mbined groundw	rater and surface water pathways
SPR1	Leachate => surface water	30%	Groundwater vulnerability was identified as being 'Extreme'. The site is underlain by a 'Locally Important Aquifer – Bedrock which is moderately productive in local zones'. The River Barrow and River Nore Special Area of Conservation (SAC) is located adjacent to south-eastern site boundary. There is a direct connection between the site and the Woodstock Park stream.
SPR2	Leachate => SWDTE	20%	Aquifer and bedrock present a groundwater pathway.
Leachate mig	ration through gro	oundwater pathy	vay
SPR3	Leachate => human presence	25%	Residential dwelling greater than 50m but less than 250m from the waste body. It is unlikely that this dwelling would be exposed to any subsurface leachate.

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SPR No.	Linkage	Normalised Score	Justification
SPR4	Leachate => GWDTE	16.67%	The nearest groundwater source protection zone (SPZ) is located greater than 1 km away from the site boundary.
SPR5	Leachate => Aquifer	15%	Locally Important Aquifer – Bedrock that is moderately productive in local zones.
SPR6	Leachate => Public Supply	0%	The nearest groundwater protection zone (outer source protection area) is located greater than 1 km away from the site boundary with no karst aquifer present.
SPR7	Leachate => SWDTE	25%	The Woodstock Park stream crosses the site from east to south-west.
Leachate migr	ation through sur	face water pathy	vay
SPR8	Leachate => Surface Water	50%	There is a direct connection between the landfill site and the Woodstock Park stream surface water receptor, which crosses the site.
SPR9	Leachate => SWDTE	33.33%	There is a direct surface water pathway from the site to surface water receptors. The nearest SAC/pNHA (River Nore) is located greater than 50m but less than 250m of the waste body.
Landfill gas mi	igration pathway	(lateral & vertica	I) all off
SPR10	Landfill Gas => Human Presence	33.33%	The historic landfill is located within forestry with the grown dwater vulnerability described as 'Extreme' and the adulter as 'Locally Important'.
SPR11	Landfill Gas => Human Presence	30% For itse	The historic landfill is located within forestry with the nearest residential dwelling located greater than 50 m but less than 150 m from the waste body.

### 1.3 Tier 2 Site investigation

Fehily Timoney and Company (FT) was appointed by Kilkenny County Council to prepare a Tier 2 environmental risk assessment report on the Oldcourt historical landfill, located at Inistioge, Co. Kilkenny.

Oldcourt site investigation included the following elements:

- 2 No. machine excavated trial pits (TP04, TP05)
- 3 No. hand dug trial pits (TP01, TP02, TP03)
- 2 No. boreholes by light percussion methods for window sampling
- Factual reporting

The Tier 2 site investigations confirmed that the historic landfill typically contained fragments plastic bottles, glass bottles, plastic bags, pieces of steel, clothing and plastic fibre straps deposited to the eastern side of the site where the area of flatter ground is located which covers an area approximately 0.14 hectares.

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Made ground comprising waste was found to depths of 1.6m and 3.0m in machine dug trial pits and depths of 2.0m and 3.0m in window sample boreholes.

### 1.4 Tier 2 Risk Classification and Tier 2 SPRs

The Tier 2 site investigation risk assessment concluded that the risk rating of the site was Low (Class C). The highest single risk rating for the site was calculated to be 25% for source-pathway-receptor (SPR) Linkage 8, which referred to leachate migration through a surface water pathway to a surface water receptor. The SPR linkages examined in the Tier 2 are discussed in Table 1.2..

Table 1-2: Tier 2 Selected SPR Linkages

SPR No.	Linkage	Normalised Score	Justification
Leachate migra	ation through cor	mbined ground	dwater and surface water pathways
SPR1	Leachate => surface water	18%  Gorsent of cod	Groundwater vulnerability was identified as being 'Extreme' and site is underlain by a 'Locally Important Aquifer — Bedrock which is moderately productive in local zones'. The River Barrow and River Nore Special Area of Conservation (SAC) is located adjacent to southeastern site boundary. There is a direct connection between the site and the Woodstock Park stream.  Surface water monitoring was conducted at upstream and connected rivers, as the nearest surface water receptors.
SPR2	Leachate => SWDTE	12%	Aquifer and bedrock present a groundwater pathway however, the surface water monitoring did not demonstrate any deterioration in surface water quality.
Leachate migra	ation through gro	oundwater pat	hway
SPR3	Leachate => human presence	10%	Residential dwelling greater than 50m but less than 250m from the waste body. It is unlikely that this dwelling would be exposed to any subsurface leachate. House drinking water is supplied via mains water supply.
SPR4	Leachate => GWDTE	10%	The nearest groundwater source protection zone (SPZ) is located greater than 1 km away from the site boundary.
SPR5	Leachate => Aquifer	9%	Locally Important Aquifer – Bedrock that is moderately productive in local zones.
SPR6	Leachate => Public Supply	0%	The nearest groundwater protection zone (outer source protection area) is located greater than 1 km away from the site boundary with no karst aquifer present.

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SPR No.	Linkage	Normalised Score	Justification
SPR7	Leachate => SWDTE	16%	The Woodstock Park stream crosses the site from east to south-west. Surface water monitoring did not indicate any deterioration other than BOD in surface quality attributable to the presence of waste at the historical landfill.
Leachate migr	ation through sur	face water pa	thway
SPR8	Leachate => Surface Water	25%	There is a direct connection between the landfill site and the Woodstock Park stream surface water receptor, which crosses the site. Surface water monitoring did not demonstrate any deterioration other than BOD in water quality between upstream and downstream monitoring locations therefore indicating that the landfill is not having a deleterious effect on the Woodstock Park stream, as the nearest surface water receptor.
SPR9	Leachate => SWDTE	17%	There is a direct surface water pathway from the site to surface water receptors. The nearest SAC/pNHA (River Nore) is located greater than 50m but less than 250m of the waste body. Surface water monitoring did not demonstrate any deterioration in water quality other than BOD between upstream and downstream monitoring locations.
Landfill gas mi	igration pathway	(lateral & vert	ical) solit and
SPR10	Landfill Gas => Human Presence	10% Çoʻ	The historic landfill is located within forestry with the groundwater vulnerability described as 'Extreme' and the adulter as 'Locally Important'. No visual or olfactory evidence putrescible/biodegradable waste was noted by CGLs supervising Geologist during the site investigation.
SPR11	Landfill Gas => Human Presence	Consent of col	The historic landfill is located within forestry with the nearest residential dwelling located greater than 50 m but less than 150 m from the waste body. No visual or olfactory evidence of putrescible/biodegradable waste was noted by CGLs supervising Geologist during the site investigation.

### 1.4.1 Leachate migration through surface water pathways (SPR8)

Leachate migration poses a low risk to the adjacent surface water stream, the Woodstock Park stream. Surface water monitoring was conducted at two locations on the Woodstock Park stream upstream and downstream of the historic landfill. The monitoring results did not present concentrations above the relevant surface water quality thresholds apart from BOD downstream on the first round.

Although leachate wasn't observed within the Woodstock Park Stream directly and the outcome of surface water monitoring doesn't suggest the site is actively causing a deterioration in water quality downstream of the site there is still a potential pathway for leachate to migrate to the river.

The Tier 2 assessment recommended that additional surface water monitoring be conducted prior to a Certificate of Authorisation (CoA) application. This Tier 3 has been prepared for the purpose examining the findings of additional surface water monitoring and to inform appropriate site remediation measures.

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### 2. TIER 3 QUANTITATIVE RISK ASSESSMENT SCOPE OF WORKS

### 2.1 Tier 3 Overview

A Tier 3 assessment includes some form of quantitative risk assessment either as a Generic Quantitative Risk Assessment (GQRA) or as a Detailed Quantitative Risk Assessment (DQRA).

This Tier 3 assessment report applies a GQRA to further assess the risk to surface waters and further examines the Tier 2 (see Table 1-2) linkages in relation to the SPR8 Leachate migration through surface water pathway resulting in a risk rating score of 25%.

As part of the Tier 3 assessment, a further review of the Tier 2 site investigations and environment risk assessments was conducted.

The 2018 site investigation findings and the subsequent 2019 Tier 2 assessment concluded that the Oldcourt site presents a **low risk**. The Tier 2 report recommended additional surface water monitoring be conducted at upstream and downstream locations on the Woodstock park Stream prior to the Certificate of Authorisation (CoA) application. This Tier 3 assessment included an analysis and interpretation of those additional rounds of monitoring to confirm the findings of the Tier assessment and confirm the potential risk of the site to the Woodstock Park Stream.

Based on the outcomes of the GQRA suitable remediation measures are presented in Section 5 of this report.

## 2.2 Generic Quantitative Risk Assessment

The generic quantitative risk assessment addressed the risk SPR8 Leachate migration through surface water pathway to surface water receptors (SPR8).

The GQRA rely on information gathered as part of the Tier 2 investigations and additional surface water monitoring conducted in 2020. Relevant environmental characteristics considered in evaluating the site and carrying out this Tier 3 investigation are discussed below.

### 2.3 Existing Geological, Hydrogeological and Hydrological Environment

As discussed in Section 1, the risk to adjacent surface waters was identified as the primary environmental risk associated with the site. The application of the EPA risk calculation and scoring methodology, as outlined in the EPA CoP, is reliant on understanding the geological and hydrogeological characteristics of the site and the surrounding environment. An accurate understanding and rating of the geological, hydrogeological and hydrological characteristics of the site and environment are directly linked to determining the primary source-pathway-receptor linkages and potential impacts/risks associated with the site. The Tier 2 site investigation and risk assessment provided a better understanding of the site and surrounding environs. Summary findings of the relevant environmental characteristics considered when evaluating the site and carrying out this Tier 3 investigation are discussed below.

The site is approximately 0.6 ha in size, overgrown with vegetation and trees located in a rural, primarily agricultural area in east Kilkenny.

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2 - Tier 3 Quantitative Risk Assessment Scope of Works



The site is located 1 km from Inistioge town. Lands within 1 km of the site are primarily agricultural with scattered one-off housing. The quaternary map provided by GSI Online identifies the quaternary sediments at the site as 'Bedrock, outcrop or subcrop' and the soil underlying the site is defined as 'Shallow well drained mineral (Mainly acidic)'. During the trial pitting and window sampling excavations during the site investigation, the presence of sandy gravelly clay described in the driller's logs to a depth of approximately 3.80 m BGL at borehole BH01 and 3.0m BGL at BH02.

The bedrock beneath the site is founded on the Oldcourt Member Formation, described as 'Schists, garnet-quartzites (costicules)'. This formation consists of Psammites, semi-pelites and pelitic schists containing thin finely-garnetiferous quartzite bands (coticules). Bedrock was not encountered during the installation of the boreholes.

The underlying bedrock aquifer is a 'Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones'. There are no Groundwater Drinking Water Protection Areas within the site boundaries according to GSI. The closest one, Thomastown PWS, is located approximately 4.40 km to the Northwest of the site.

The vulnerability of groundwater to contamination is classified as Extreme with areas of the site described as Rock at or near surface or karst. Much of the site consists of Made Ground with unknown subsoil permeability.

The site is located within the: Nore catchment (Hydrometric Area 15), Nore\_SC\_120 sub-catchment and Clodiagh\_010 river sub-basin. The nearest surface water feature to the site is a stream (EPA Name: Woodstock Park) which crosses the site immediately and flows in a north-east to south-west direction eventually meeting the River Nore c.150 m downstream of the site. The Nore River is located approximately 150 m south-east of the site at its closest point. The Nore eventually discharges to River Barrow, which discharges to Waterford Harbour c. 30 km south of the site.

### 2.3.1 Conceptual Site Model (CSM)

A revised conceptual site model was prepared as part of the Tier 2 assessment and is included below for reference. The revised CSM illustrates the dentified potential for migration of leachate from the site to the adjacent surface water stream, the Woodstock Park stream.

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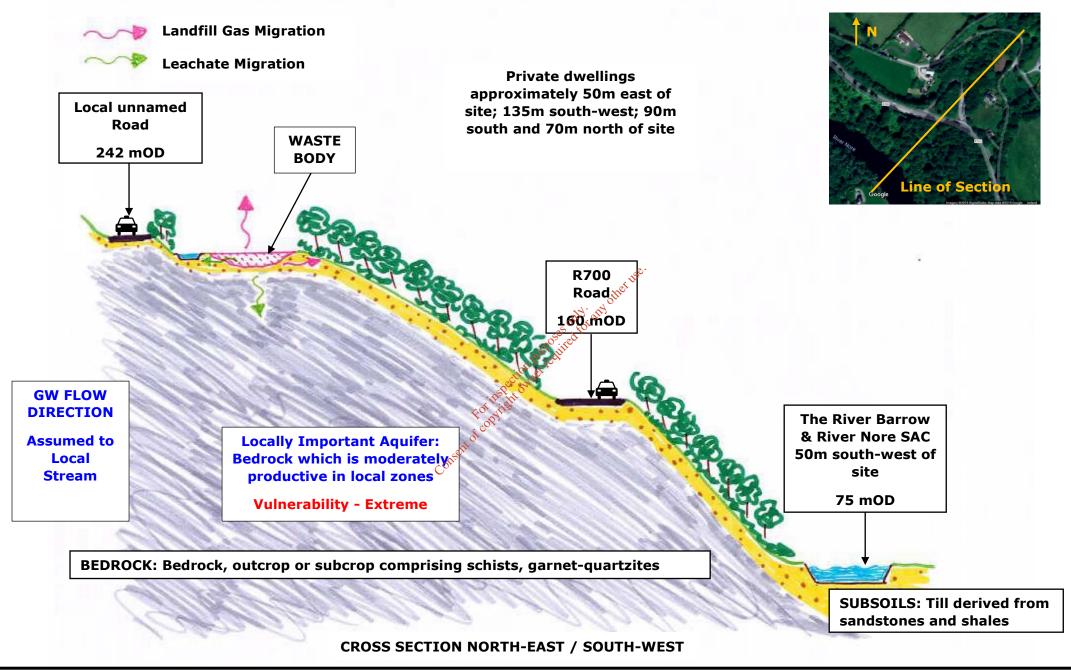


FIGURE 3.1 OLDCOURT HISTORIC LANDFILL
CONCEPTUAL SITE MODEL

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### 2.4 Impact of Leachate on Receiving Surface Waters

The potential impact of leachate emissions to the waterbody crossing the site was identified as being a primary risk associated with the site.

Surface water monitoring was conducted in 2018 at two locations upstream (SW1) and downstream (SW2) of the site. In accordance with Tier 2 recommendations, to further assess the potential impact of the landfill, if any, on downstream water quality, further surface water analysis was undertaken at both monitoring locations, SW1 and SW2, on three occasions, specifically the 13<sup>th</sup> May, 10<sup>th</sup> June and 30<sup>th</sup> June 2020.

The results of the surface water monitoring from SW1 and SW2 show 1 exceedance of the EQS (2009) guideline limit values for BOD for the first round out of four monitoring rounds. Results from the downstream (SW2) sampling locations detected a BOD concentration of 3.44 mg/l, greater than the upper, 95%ile guideline threshold of 2.6 mg/l on a single occasion.

All other parameters tested were found to be below the maximum allowable concentrations (MAC) and Environmental Quality Standard (EQS) guideline values.

A comparison of upstream of downstream samples results also demonstrates that the presence of waste is not having a deleterious effect on the quality of the Woodstock Park Stream, with no significant difference observed between monitoring locations, with the exception of BOD result from the September 2018 sample.

The results of all monitoring rounds for this site, including september 2018, are shown in Table 3-3. The complete laboratory reports with all results are presented in Appendix 1.

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## **Table 3-1:** Surface Water Sampling Results

				27/09	/2018	13/05	/2020	10/06	/2020	30/06	/2020
Test	Units	EQS <sup>1</sup>	MAC <sup>2</sup>	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
Inorganics	Inorganics										
Ammoniacal Nitrogen as N	mg/l	0.065 (mean) 0.140 (95%ile)		<0.2	<0.2	1	-	-	-	1	-
Conductivity @ 20 deg.C	mS/cm			0.102	0.148	0.151	0.154	0.126	0.137	0.133	0.134
Fluoride	mg/l	0.5		-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Oxygen, dissolved	mg/l			11.7	11.6	10.1	10.6	9.36	9.71	10.9	12.6
рН	pH Units	6.0 <ph<9.0< td=""><td></td><td>7.37</td><td>7.05</td><td>7.68</td><td>7.74</td><td>7.49</td><td>7.61</td><td>7.56</td><td>7.44</td></ph<9.0<>		7.37	7.05	7.68	7.74	7.49	7.61	7.56	7.44
Phosphate (Ortho as PO4)	mg/l	≤0.035(mean) ≤0.075 (95%ile)		roses only	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/l		^	Pilifedil 7.3	21.3		-	-	-	1	-
Chloride	mg/l		oecitor.	12.7	14.2	13.8	13.9	12.7	12.8	13.4	13.4
COD, unfiltered	mg/l		institu	-	-	8.92	<7	<7	<7	<7	<7
Ammoniacal Nitrogen as N (low level)	mg/l	≤0.065 (mean) ≤0.140 (95%ile)	For Single	-	1	<0.01	0.0122	0.0182	0.0304	0.0181	0.034
Cyanide, Total	mg/l	0.01	SIL	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BOD, unfiltered	mg/l	≤1.5 (mean) ≤2.6 (95%ile)		<1	3.44	<1	<1	<1	<1	<1	<1
Suspended solids, Total	mg/l			-	-	<9	2.6	3.45	2.3	<2	3.15
Sulphate (soluble) as S	mg/l			-	-	2.5	2.57	2.13	2.27	2.27	2.3
Filtered (Dissolved) Metals											
Mercury (diss.filt)	μg/l		0.07	-	-	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01
Arsenic (diss.filt)	μg/l	25		-	-	11.5	11.5	11.7	12.2	13.1	13.2
Cadmium (diss.filt)	μg/l	0.15	0.9	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	μg/l	4.7	32	-	-	<1	<1	<1	<1	<1	<1
Copper (diss.filt)	μg/l	30		-	-	0.551	0.612	0.428	0.481	0.621	0.495
Lead (diss.filt)	μg/l	1.2	14	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

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				27/09	/2018	13/05	/2020	10/06	/2020	30/06	/2020
Test	Units	EQS <sup>1</sup>	MAC <sup>2</sup>	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
Nickel (diss.filt)	μg/l	4	34	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	0.436
Semi-Volatile Organic Compo	unds (SVOCs	5)									
1,2,4-Trichlorobenzene (aq)	μg/l	0.4	N/A	-	-	<2	<1	<1	<1	<1	<1
Anthracene (aq)	μg/l	0.1	0.1	•	1	<2	<1	<1	<1	<1	<1
bis(2-Ethylhexyl) phthalate (aq)	μg/l	1.3	N/A	1	1	<4	<2	<2	<2	<2	<2
Benzo(b)fluoranthene (aq)	μg/l		0.017	1	150.	<2	<1	<1	<1	<1	<1
Benzo(k)fluoranthene (aq)	μg/l		0.017	•	other 1	<2	<1	<1	<1	<1	<1
Benzo(a)pyrene (aq)	μg/l	0.00017	0.27	May.	atil -	<2	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene (aq)	μg/l		0.0082	oses of for	-	<2	<1	<1	<1	<1	<1
Diethyl phthalate (aq)	μg/l	1.3	N/A	pur equirer -	-	<2	<1	<1	<1	<1	<1
Fluoranthene (aq)	μg/l	0.0063	U. =	jert -	-	<2	<1	<1	<1	<1	<1
Hexachlorobenzene (aq)	μg/l		0.05 115 Pet Of	-	-	<2	<1	<1	<1	<1	<1
Hexachlorobutadiene (aq)	μg/l		0.600 yill	-	-	<2	<1	<1	<1	<1	<1
Pentachlorophenol (aq)	μg/l	0.4	18°	-	-	<2	<1	<1	<1	<1	<1
Phenol (aq)	μg/l	8	<sup>2</sup> 46	-	-	<2	<1	<1	<1	<1	<1
Naphthalene (aq)	μg/l	2	130	-	-	<2	<1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene (aq)	μg/l		N/A	-	-	<2	<1	<1	<1	<1	<1
<b>Volatile Organic Compounds</b>	VOCs)										
Dichloromethane	μg/l	20	N/A	-	-	<3	<3	<3	<3	<3	<3
Carbontetrachloride	μg/l	12	N/A	-	-	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	μg/l	10	N/A	-	-	<1	<1	<1	<1	<1	<1
Benzene	μg/l	10	50	-	-	<1	<1	<1	<1	<1	<1
Toluene	μg/l	10		-	-	<1	<1	<1	<1	<1	<1
m,p-Xylene	μg/l	10		-	-	<1	<1	<1	<1	<1	<1
o-Xylene	μg/l	10		-	-	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	μg/l	0.4	N/A	-	-	<1	<1	<1	<1	<1	<1

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				27/09	/2018	13/05	/2020	10/06	/2020	30/06	/2020
Test	Units	EQS <sup>1</sup>	MAC <sup>2</sup>	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
Hexachlorobutadiene	μg/l		0.6	-	-	<1	<1	<1	<1	<1	<1
Naphthalene	μg/l	2	130	-	-	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	μg/l	0.4	N/A	-	-	<1	<1	<1	<1	<1	<1
1,3,5-Trichlorobenzene	μg/l	0.4	N/A	1	-	<1	<1	<1	<1	<1	<1
<b>Combined Pesticides / Herbic</b>	ides										
Pentachlorobenzene	μg/l	0.007	N/A	•	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Trifluralin	μg/l	0.03	N/A	1	, 112°	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01
Alachlor	μg/l	0.3	0.7	•	other -	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	μg/l	0.0000002	0.0003	only.	अप्रिं -	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	μg/l	sum = 0.01	N/A	ooses Ofor	1	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Terbutryn	μg/l	0.065	0.34	purpo into -	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	μg/l	sum = 0.01	N/A ection	ter -	1	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	μg/l	0.0000002	0.0003	-	-	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01
Endosulphan I	μg/l	0.005	0.010	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,3,5-Trichlorobenzene	μg/l	0.4	N/A	1	1	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	μg/l	sum = 0.01	N/A	•	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobutadiene	μg/l		0.6	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
1,2,4-Trichlorobenzene	μg/l	0.4	N/A	ı	ı	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	μg/l	sum = 0.01	N/A	•	1	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01
1,2,3-Trichlorobenzene	μg/l	0.4	N/A	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	μg/l	0.0006	0.0007	ı	ı	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	μg/l	0.005	0.01	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	μg/l	0.01	N/A	-	-	<0.01	<0.01	<0.02	<0.02	<0.02	<0.03
Hexachlorobenzene	μg/l		0.05	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan Sulphate	μg/l	0.005	0.01	-	-	<0.04	<0.04	<0.02	<0.02	<0.02	<0.02
Diazinon	μg/l	0.01	0.02	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01

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**CLIENT: Kilkenny County Council PROJECT NAME:** 

**Tier 3- Oldcourt Historical Landfill** 

2 - Tier 3 Quantitative Risk Assessment Scope of Works SECTION:



				27/09	/2018	13/05	/2020	10/06	/2020	30/06	/2020
Test	Units	EQS <sup>1</sup>	MAC <sup>2</sup>	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
Triallate	μg/l	670	670	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	μg/l	0.6	2	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	μg/l	1	4	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	0.0149
Chlorpyriphos-methyl	μg/l	0.03	0.1	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	μg/l	0.8	4	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos	μg/l	0.03	0.1	-	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorfenvinphos	μg/l	0.1	0.3	-	, 112°C.	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01

### Notes:

Environmental Quality Standard (EQS) as per European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I No. 272 of 2009). Refers to Annual-Average (AA) EQS for relevant parameters.

Maximum Admissible Concentration (MAC), as classified by European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I No. 272 of 2009). Refers to Annual-Average (AA).

ems shaded in bold are in exceedance of the European Communities MACs periodical transport of the European Communities of the European \* Items shaded in **bold** are in exceedance of the European Communities MACs, rectangled the shaded in **orange** are in exceedance of the 2009 EQS Regulations are in exceedance of the 2009 EQS Regulations.

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## 3. CONCLUSIONS AND RECOMMENDATIONS

### 3.1 Conclusions

This Tier 3 assessment:

- Reviewed the findings of the Tier 1 risk assessment.
- Reviewed the findings of the Tier 2 site investigation and risk assessment.
- Applied a GQRA and reviewed additional surface water monitoring results and compared them to relevant surface water quality standards in order to determine the impact of the deposited waste on the quality of the Woodstock Park Stream.
- Confirmed the site to be a Low Risk (Class C), with the highest risk identified at the site is the potential for migration of leachate from the site to the adjacent Woodstock Park stream. However, the waste has been identified as inert hence the risk of leachate migration to the stream is low.

### 3.2 Recommendations

Based on the site investigation results of the initial Tier 2 assessment and the further monitoring undertaken the Tier 3 assessment confirmed the site to be classified as a Low Risk. For a low-risk site, the CoP indicates that these sites are not considered to pose a significant risk to the environment or human health. It is therefore recommended that this site can proceed with a Certificate of Authorisation application.

Further details regarding the proposed monitoring are discussed in Section 4.

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Kilkenny County Council Tier 3- Oldcourt Historical Landfill 4 - Remedial Action Plan



## 4. REMEDIAL ACTION PLAN

### 4.1 Remediation Plan

The primary objective of the proposed remediation will be to confirm the waste body is no longer affecting the local surface waters via leachate migration

### 4.1.1 Leachate migration through surface water pathways (SPR8)

The Tier 2 assessment determined that the site presented only a low risk to the environment, with respect to all SPR linkages with the highest calculated score for the site being 25%, referring to SPR8.

Three additional rounds of surface water monitoring on the Woodstock Park Stream conducted in 2020, indicated that the waste is not causing deleterious effect on surface water quality of the stream. This confirms the determination that the risk associated with the site is low. As such, no physical remediation or engineering works are required.

Proposed measures are limited to routine surface water monitoring on the Woodstock Park Stream

### 4.1.2 Proposed Surface Water Monitoring Regime

The EPA Landfill Monitoring landfill manual outlines recommended, minimum monitoring requirements for ground and surface waters. These parameters are shown Table 5-1 below and are as presented in Table C.2 of the EPA's Landfill Manuals - Landfill Monitoring 2nd Edition (2003).

It is recommended that surface water monitoring be conducted annually at locations on the Woodstock Park Stream, upstream and downstream of the site in accordance with parameters listed in Table 4-1:

Table 4-1: Parameters for Monitoring of Surface Water

Monitoring Parameter <sup>1</sup>	Frequency	Surface Water	Location
Temperature		✓	
Dissolved Oxygen		✓	
рН		✓	
Electrical Conductivity		✓	SW1
Total suspended solids	Annual	✓	
Total dissolved solids		✓	SW2
Ammonia (as N)		✓	
Total oxidized nitrogen (as N)		✓	
Total organic carbon		✓	

<sup>&</sup>lt;sup>1</sup> Tables D.1 and D.2 of the EPA Landfill Monitoring manual recommend guideline minimum reporting values for parameters.

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Monitoring Parameter <sup>1</sup>	Frequency	Surface Water	Location
Biochemical Oxygen Demand		✓	
Chemical Oxygen Demand		✓	
Metals <sup>2</sup>		✓	
Total Alkalinity (as CaCO <sub>3</sub> )		✓	
Sulphate		✓	
Chloride		✓	
Molybdate Reactive Phosphorous		✓	
Cyanide (Total)		✓	
Fluoride		✓	

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<sup>&</sup>lt;sup>2</sup> Metals for analysis should include: calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury.



**CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING** 

Surface Water Sampling Analysis Results

Consent Leginggerent Legingge



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside

> Tel: (01244) 528700 Fax: (01244) 528701

CH5 3US

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

**Fehily Timoney** 3rd Floor North Park Offices North Park Business Park North Road Dublin Dublin 11

Attention: Daniel Hayden

## **CERTIFICATE OF ANALYSIS**

Date: 26 October 2018 **Customer:** D\_FTIM\_DUB Sample Delivery Group (SDG): 180929-57 **Your Reference:** P1723 Location: Oldcourt Report No: 478763

This report has been revised and directly supersedes 475845 in its entirety.

We received 2 samples on Saturday September 29, 2018 and of these samples were scheduled for analysis which was completed on Monday October 08, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

Sonia McWhan Operations Manager





ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.



Validated

Client Reference: P1 723 Order Number: Z1238 SDG: 180929-57 Report Number: 478763 Location: Oldcourt Superseded Report: 475845

# **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
18429303	sw1		0.00 - 0.00	27/09/2018
18429310	sw2		0.00 - 0.00	27/09/2018

Maximum Sample/Coolbox Temperature (°C):

ISO5667-3 Water quality - Sampling - Part3 - During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

12.2 ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.





DG: 180929-57 Client Reference:P1723 Report Number: 478763 ocation: Oldcourt Order Number: Z1238 Superseded Report: 475845

ALS Location:	Oldcourt		Order Number:			Z1238				
Results Legend  X Test No Determination	Lab Sample No(s)					18429303				18429310
Possible  Sample Types -	Custome Sample Refe					sw1				sw2
S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate	AGS Refere	ence								
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage	Depth (n	n)		0.00 - 0.00		0.00		0.00 - 0.00		
US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Container		250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
	Sample Ty	/pe	WS	WS	WS	WS	WS	WS	WS	3MS
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2			X			A · A	A Chile	1150
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X		NI PO	es of	X X		
BOD True Total	All	NDPs: 0 Tests: 2	Х	i Se	ction	Purily Jei rec	X			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 2	Çoʻ	ili g				X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	it or			X				X
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 2		X				X		
pH Value	All	NDPs: 0 Tests: 2		X				X		



SDG: 180929-57 Location: Oldcourt Client Reference: P1 723 Order Number: Z1238

Report Number: Superseded Report:

478763 475845

(7123)							
Results Legend # ISO17025 accredited.	Cust	omer Sample Ref.	sw1	sw2			
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test.		Depth (m) Sample Type Date Sampled	0.00 - 0.00 Surface Water (SW) 27/09/2018	0.00 - 0.00 Surface Water (SW) 27/09/2018			
** % recovery of the surrogate st check the efficiency of the me results of individual compoun samples aren't corrected for the	ds within he recovery	Sample Time Date Received SDG Ref	29/09/2018 180929-57 18429303	29/09/2018 180929-57 18429310			
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see append	lix)	ab Sample No.(s) AGS Reference	10423303	10423310			
Component BOD, unfiltered	LOD/Units <1 mg/l	Method TM045	<1	3.44			
			#	#			
Oxygen, dissolved	<0.3 mg/l	TM046	11.7	11.6			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #			
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.102 #	0.148 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	8.36 #	8.52 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.464 #	0.841 #			
Sulphate	<2 mg/l	TM184	7.3 #	21.3 #			
Chloride	<2 mg/l	TM184	12.7 #	14.2 #			
pH	<1 pH Units	TM256	7.37	7.05 #			
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SDG:180929-57Client Reference:P1723Report Number:478763Location:OldcourtOrder Number:Z1238Superseded Report:475845

Validated

## **CERTIFICATE OF ANALYSIS**



SDG:180929-57Client Reference:P1723Report Number:478763Location:OldcourtOrder Number:Z1238Superseded Report:475845





SDG:180929-57Client Reference:P1723Report Number:478763Location:OldcourtOrder Number:Z1238Superseded Report:475845

Validated

## **CERTIFICATE OF ANALYSIS**



SDG:180929-57Client Reference:P1723Report Number:478763Location:OldcourtOrder Number:Z1238Superseded Report:475845

Validated

## **CERTIFICATE OF ANALYSIS**



SDG:180929-57Client Reference:P1723Report Number:478763Location:OldcourtOrder Number:Z1238Superseded Report:475845



ALS

SDG: 180929-57 Client Reference:P1723 Report Number: 478763
Location: Oldcourt Order Number: Z1238 Superseded Report: 475845

**Table of Results - Appendix** 

Method No	Reference	Description
Method No	Reference	Description
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



ALS

SDG: 180929-57 Client Reference: P1723 Report Number: 478763
Location: Oldcourt Order Number: Z1238 Superseded Report: 475845

# **Test Completion Dates**

Lab Sample No(s)	18429303	18429310
Customer Sample Ref.	sw1	sw2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Туре	Surface Water	Surface Water
Ammoniacal Nitrogen	05-Oct-2018	05-Oct-2018
Anions by Kone (w)	08-Oct-2018	08-Oct-2018
BOD True Total	04-Oct-2018	04-Oct-2018
Conductivity (at 20 deg.C)	05-Oct-2018	05-Oct-2018
Dissolved Metals by ICP-MS	08-Oct-2018	08-Oct-2018
Dissolved Oxygen by Probe	01-Oct-2018	01-Oct-2018
pH Value	04-Oct-2018	04-Oct-2018





SDG: 180929-57 P1723 478763 Client Reference Report Number: Superseded Report: Location: Oldcourt Order Number: 71238 475845

Appendix

## General

- for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.
- 2. Samples will be run in duplicate upon request, but an additional charge may be incurred
- 3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.
- 4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
- 6. When requested the individual sub-sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.
- 7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate
- 8. If appropriate preserved bottles are not received preservation will take place on received. However, the integrity of the data may be compromised.
- 9. NDP No determination possible due to insufficient/unsuitable sample.  $m ^{\circ}$
- 10. Metals in water are performed on a filtered sample, and therefore represent dissolved Consent metals - total metals must be requested separately.
- 11. Results relate only to the items tested.
- 12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.
- 13. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect
- 14. Product analyses Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
- 15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
- 16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).
- Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
- 18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
- 19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

- 1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis
  - 22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
  - 23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
  - 24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected

## Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

13	Container with Headspace provided for volatiles analysis
ر گئی	Micorrect container received
O BO	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

### Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name
Chrysofi le	White Asbesbs
Amosite	Brown Asbestos
Cro d dolite	Blue Asbe stos
Fibrous Act nolite	-
Fib to us Anthop hyll ite	-
Fibrous Tremolite	-

### **Visual Estimation Of Fibre Content**

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

17:15:55 26/10/2018 26/10/2018 Modification Date:



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US

> Tel: (01244) 528700 Fax: (01244) 528701

email: haward encustomers er vices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney 3rd Floor North Park Offices North Park Business Park North Road Dublin Dublin 11

Attention: Gary Lawlor

### **CERTIFICATE OF ANALYSIS**

Date of report Generation:22 May 2020Customer:Fehily TimoneySample Delivery Group (SDG):200516-40Your Reference:P20-015Location:Oldcourt LandfillReport No:553007

We received 2 samples on Saturday May 16, 2020 and 2 of these samples were scheduled for analysis which was completed on Friday May 22, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALSOLife Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager







Validated

SDG: 200516-40 Client Reference: P20-015 Report Number: 553007 Location: Oldcourt Landfill Z2085 Superseded Report: Order Number:

## **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22157384	SW1		0.00 - 0.00	13/05/2020
22157398	SW2		0.00 - 0.00	13/05/2020

Maximum Sample/Coolbox Temperature (°C):

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining

a temperature of (5±3)°C.

6.8

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



### Validated

553007

**CERTIFICATE OF ANALYSIS** 



SDG: 200516-40 Client Reference: P20-015 Report Number: Oldcourt Landfill Z2085 Superseded Report: Location: Order Number: Results Legend 22157384 22157398 Lab Sample No(s) X Test No Determination Possible Customer SW2 SW Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) 0.5l glass bottle (ALE227) Vial (ALE297) H2SO4 (ALE244) HNO3 Filtered (ALE204) NaOH (ALE245) 500ml Plastic (ALE208) 250ml BOD (ALE212) NaOH (ALE245) DW - Drinking Water Non-regulatory 500ml Plastic (ALE208) 250ml BOD (ALE212) Vial (ALE297) UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Acid Herbicides by GCMS All NDPs: 0 Tests: 2 Х Χċ Ammonium Low All NDPs: 0 Tests: 2 Χ Χ Anions by Kone (w) All NDPs: 0 Tests: 2 X X BOD True Total All NDPs: 0 Tests: 2 X COD Unfiltered All NDPs: 0 Tests: 2 Х Conductivity (at 20 deg.C) All NDPs: 0 Tests: 2 Χ Х Cyanide Comp/Free/Total/Thiocyanate All NDPs: 0 Tests: 2 Χ Х Dissolved Metals by ICP-MS All NDPs: 0 Tests: 2 Χ Χ Dissolved Oxygen by Probe All NDPs: 0 Tests: 2 X X Fluoride All NDPs: 0 Tests: 2 X X Mercury Dissolved All NDPs: 0 Tests: 2 Х Х Mineral Oil C10-40 Aqueous (W) All NDPs: 0 Tests: 2 X X PCB Congeners - Aqueous (W) All NDPs: 0 Tests: 2 X Х Pesticides (Suite I) by GCMS All NDPs: 0 Tests: 2 Х Х Pesticides (Suite II) by GCMS All NDPs: 0 Tests: 2 Χ X

### Validated

553007

### **CERTIFICATE OF ANALYSIS**

(AIS)	

SDG: 200516-40 Client Reference: P20-015 Report Number: Location: Oldcourt Landfill Z2085 Superseded Report: Order Number: Results Legend 22157384 22157398 Lab Sample No(s) X Test No Determination Possible Customer SW2 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) HNO3 Filtered (ALE204) H2SO4 (ALE244) 0.5l glass bottle (ALE227) Vial (ALE297) 500ml Plastic (ALE208) 250ml BOD (ALE212) 500ml Plastic (ALE208) 250ml BOD (ALE212) NaOH (ALE245) NaOH (ALE245) DW - Drinking Water Non-regulatory Vial (ALE297) UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Pesticides (Suite III) by GCMS All NDPs: 0 Tests: 2 X Mei X pH Value All NDPs: 0 Tests: 2 X X Phosphate by Kone (w) All NDPs: 0 Tests: 2 X X Suspended Solids All NDPs: 0 Tests: 2 Х SVOC MS (W) - Aqueous All NDPs: 0 Tests: 2 X Χ VOC MS (W) All NDPs.0 Tests: 2 Χ Χ

ALS

_	Results Legend		0 . t 0 t . D . t					
	O17025 accredited. CERTS accredited.		Customer Sample Ref.	SW1	SW2			
aq Aq	queous / settled sample. ssolved / filtered sample.		Depth (m)	0.00 0.00	0.00 - 0.00			
tot.unfilt To	stal / unfiltered sample. btal / unfiltered sample. bcontracted - refer to subcontractor report f		Sample Type	0.00 - 0.00 Surface Water (SW)	Surface Water (SW)			
ac	creditation status.		Date Sampled Sample Time	13/05/2020	13/05/2020			
eff	recovery of the surrogate standard to check ficiency of the method. The results of individ	lual	Date Received	16/05/2020	16/05/2020			
	empounds within samples aren't corrected fo covery	r the	SDG Ref	200516-40 22157384	200516-40 22157398			
	igger breach confirmed imple deviation (see appendix)		Lab Sample No.(s) AGS Reference	22157304	22157390			
Compone		LOD/Units	s Method					
Suspende	d solids, Total	<2 mg/l	TM022	<9	2.6			
BOD, unfil	torad	<1 mg/l	TM045	# <1	# <1			
BOD, uniii	lereu	\1111g/1	110043	#	"#			
Oxygen, di	issolved	<0.3 mg/	'I TM046	10.1	10.6			
, 5,								
Ammoniac	al Nitrogen as N (low	<0.01 mg	/I TM099	<0.01	0.0122			
level)				#	#			
Fluoride		<0.5 mg/	'I TM104	<0.5	<0.5			
			=		_			
COD, unfil	tered	<7 mg/l	TM107	8.92	<7			
Conductivi	ity @ 20 deg.C	<0.005	TM120	0.151 #	0.154 #	-		
Conductivi	., w 20 dog.0	mS/cm	TIVITZU	0.131	0.134			
Arsenic (di	iss.filt)	<0.5 µg/	TM152	11.5	11.5			
	•	. 1. 3		#	#			
Barium (di	ss.filt)	<0.2 µg/	TM152	4.08	3.75			
	#U.)			#	#			
Boron (dis	s.filt)	<10 µg/l	I TM152	14.2	13.2	0.1		
Codmium	(diag filt)	<0.08 µg	/I TM152	<0.08	* <0.08	1 45°C.		
Cadmium	(uiss.iiit)	<υ.υο μg	/1 1101132	<b>~</b> 0.06	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	otherus		
Chromium	(diss.filt)	<1 µg/l	TM152	<1	<1	24.204		
	(* * * * * * * * * * * * * * * * * * *	13		#	<u>#</u>	only any		
Copper (di	iss.filt)	<0.3 µg/	TM152	0.551	0.612	50		
				#	0.612 0.612	•		
Lead (diss	.filt)	<0.2 µg/	TM152	<0.2	1500 of 10			
14	- (-I: EII)	42 //	TMAEO	#	COLUMN #			
Manganes	e (diss.fiit)	<3 µg/l	TM152	<3 # <sub>6</sub>	inglight Q3			
Nickel (dis	s.filt)	<0.4 µg/	TM152	<0.4	<0.4			
		***   -3**		<b>≸#</b> (	#			
Phosphoru	us (diss.filt)	<10 µg/l	TM152	<10 cm #	<10			
				CONSC #	#			
Selenium (	(diss.filt)	<1 µg/l	TM152	G <sup>s</sup>	<1 ,,,			
Thallium (d	dian Elli	المددود	TM152	# <2	# <2			
maillum (c	aiss.iiit)	<2 µg/l	1101152	~2 #	\			
Zinc (diss.:	filt)	<1 µg/l	TM152	5.95	4.76			
(, , ,	7	13		#	#			
Sodium (D	is.Filt)	<0.076 mg	g/l TM152	8.41	8.47			
				#	#			
Magnesiur	n (Dis.Filt)	<0.036 mg	g/I TM152	4.5	4.46			
Potassium	(Dio Eilt)	<0.2 mg/	/I TM152	1.01	1.08			
FUIdSSIUIII	I (DIS.FIII)	<0.2 IIIg/	1 1101132	#	1.06			
Calcium (E	Dis.Filt)	<0.2 mg/	/I TM152	17.1	17.4			
,	,	ŭ		#	#			
Iron (Dis.F	ilt)	<0.019 mg	g/l TM152	<0.019	<0.019			
				#	#			
Mineral oil	>C10 C40 (aq)	<100 µg/	/I TM172	<200	<100			
Mercury (d	lian filt)	<0.01 µg	/I TM183	<0.01	<0.01			
iviercury (d	1155.11IL)	<0.01 μg	/1 1101103	<b>\0.01</b>	<0.01			
Phosphate	e (Ortho as PO4)	<0.05 mg	/I TM184	<0.05	<0.05			
	· ,			#	#			
Chloride		<2 mg/l	TM184	13.8	13.9			
				#	#			
Sulphate (	soluble) as S	<1 mg/l	TM184	2.5	2.57			
PCB conge	ener 28	<0.01€ · · ·	g/I TM197	<0.03	<0.015	-		
FOB conge	CIICI 20	<0.015 µg	yn 11V1197	<b>\U.U</b> \	<0.015			
PCB conge	ener 52	<0.015 µg	g/l TM197	<0.03	<0.015			
						<u> </u>	 <u> </u>	
PCB conge	ener 101	<0.015 µg	g/l TM197	<0.03	<0.015			
		l			I	1		



		2 dans 2 d = "					
Results Legend # ISO17025 accredited. M mCERTS accredited.	(	Customer Sample Ref.	SW1	SW2			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report for accreditation status.	or	Sample Type Date Sampled	Surface Water (SW) 13/05/2020	Surface Water (SW) 13/05/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individual to the control of the method.	ual	Sample Time Date Received	16/05/2020	16/05/2020			
compounds within samples aren't corrected for recovery  (F) Trigger breach confirmed	rthe	SDG Ref Lab Sample No.(s)	200516-40 22157384	200516-40 22157398			
1-3+§@ Sample deviation (see appendix)  Component	LOD/Units	AGS Reference Method					
PCB congener 118	<0.015 µg/l		<0.03	<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.03	<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.03	<0.015			
PCB congener 180	<0.015 µg/l	TM197	<0.03	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.21	<0.105			
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05			
pH	<1 pH Units	TM256	7.68 #	7.74 #			
Trifluralin	<0.01 µg/l	TM343	<0.02	<0.02			
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01	use.		
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	off for any other tise.		
Aldrin	<0.01 µg/l	TM343	<0.02	<0.02	only and		
beta-HCH	<0.01 µg/l	TM343	<0.01	ali Alil	20		
Isodrin	<0.01 µg/l	TM343	<0.02	<0.02 ×			
delta-HCH	<0.01 µg/l	TM343	<0.01 	THE COUNTY CO.02			
Heptachlor epoxide	<0.01 µg/l	TM343	O.				
o,p'-DDE	<0.01 µg/l	TM343	<0.02 ent	<0.02			
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM343	<0.02	<0.02			
cis-Chlordane	<0.01 µg/l	TM343	<0.02	<0.02			
p,p'-DDE	<0.01 µg/l	TM343	<0.02	<0.02			
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01			
Endrin	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDT	<0.01 µg/l	TM343	<0.01	<0.01			
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01			
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01	<0.01			
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02	<0.02			
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04	<0.04			
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01		•	

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	Results Legend		ustomer Sample Ref.	SW1	SW2		1	
# ISO17025 acc	credited. credited.		oumple itel.	SWI	SVVZ			
	iltered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
	ed - refer to subcontractor report for	,	Sample Type Date Sampled	Surface Water (SW) 13/05/2020	Surface Water (SW) 13/05/2020			
	of the surrogate standard to check th		Sample Time					
compounds	the method. The results of individua within samples aren't corrected for t		Date Received SDG Ref	16/05/2020 200516-40	16/05/2020 200516-40			
recovery (F) Trigger bread 1-3+§@ Sample devia	ch confirmed ation (see appendix)		Lab Sample No.(s) AGS Reference	22157384	22157398			
Component	ation (see appendix)	LOD/Units	Method					
1,3,5-Trichlorobe	enzene	<0.01 µg/l	TM344	<0.02	<0.01			
Hexachlorobutad	liene	<0.01 µg/l	TM344	<0.02	<0.01			
1,2,4-Trichlorobe	nzene	<0.01 µg/l	TM344	<0.02	<0.01			
1,2,3-Trichlorobe	nzene	<0.01 µg/l	TM344	<0.02	<0.01			
Dichlorvos		<0.01 µg/l	TM344	<0.02	<0.01			
Dichlobenil		<0.01 µg/l	TM344	<0.02	<0.01			
Mevinphos		<0.01 µg/l	TM344	<0.02	<0.01			
Tecnazene		<0.01 µg/l	TM344	<0.02	<0.01			
Hexachlorobenze	ene	<0.01 µg/l	TM344	<0.02	<0.01			
Demeton-S-meth	nyl	<0.01 µg/l	TM344	<0.02	<0.01	7115°C.		
Phorate		<0.01 µg/l	TM344	<0.02	<0.01	offy and other rise.		
Diazinon		<0.01 µg/l	TM344	<0.02	<0.01	only and		
Triallate		<0.01 µg/l	TM344	<0.02	O.OT THE CHILL	20		
Atrazine		<0.01 µg/l	TM344	<0.02	156101 pt			
Simazine		<0.01 µg/l	TM344	$\sim$	Title 1 (0.01			
Disulfoton		<0.01 µg/l	TM344	٠. ٥	<0.01			
Propetamphos		<0.01 µg/l	TM344	<0.02 disent	<0.01			
Chlorpyriphos-me	ethyl	<0.01 µg/l	TM344	<0.02	<0.01			
Dimethoate		<0.01 µg/l	TM344	<0.02	<0.01			
Pirimiphos-methy	/I	<0.01 µg/l	TM344	<0.02	<0.01			
Chlorpyriphos		<0.01 µg/l	TM344	<0.02	<0.01			
Methyl Parathion		<0.01 µg/l	TM344	<0.02	<0.01			
Malathion		<0.01 µg/l	TM344	<0.02	<0.01			
Fenthion		<0.01 µg/l	TM344	<0.02	<0.01			
Fenitrothion		<0.01 µg/l	TM344	<0.02	<0.01			
Triadimefon		<0.01 µg/l	TM344	<0.02	<0.01			
Pendimethalin		<0.01 µg/l	TM344	<0.02	<0.01			
Parathion		<0.01 µg/l	TM344	<0.02	<0.01			
Chlorfenvinphos		<0.01 µg/l	TM344	<0.02	<0.01			
trans-Chlordane		<0.01 µg/l	TM344	<0.02	<0.01			
cis-Chlordane		<0.01 µg/l	TM344	<0.02	<0.01			
Ethion		<0.01 µg/l	TM344	<0.02	<0.01			
Carbophenothion	1	<0.01 µg/l	TM344	<0.02	<0.01		•	

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		0					
Results Legend # ISO17025 accredited. M mCERTS accredited.		Customer Sample Ref.	SW1	SW2			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report f	or	Sample Type Date Sampled	Surface Water (SW) 13/05/2020	Surface Water (SW) 13/05/2020			
accreditation status.  ** % recovery of the surrogate standard to check efficiency of the method. The results of individ		Sample Time					
compounds within samples aren't corrected for		Date Received SDG Ref	16/05/2020 200516-40	16/05/2020 200516-40			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22157384	22157398			
Component	LOD/Units	Method					
Triazophos	<0.01 µg/l	TM344	<0.02	<0.01			
Phosalone	<0.01 µg/l	TM344	<0.02	<0.01			
Azinphos methyl	<0.02 µg/l	TM344	<0.08	<0.04			
Azinphos ethyl	<0.02 µg/l	TM344	<0.04	<0.02			
Etridiazole	<0.01 µg/l	TM345	<0.02	<0.01			
Pentachlorobenzene	<0.01 µg/l	TM345	<0.02	<0.01			
Tributylphosphate	<0.01 µg/l	TM345	<0.02	<0.01			
Propachlor	<0.01 µg/l	TM345	<0.02	<0.01			
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.02	<0.01			
Omethoate	<0.01 µg/l	TM345	<0.04	<0.02	use.		
Propazine	<0.01 µg/l	TM345	<0.02	<0.01	off for any other tise.		
Propyzamide	<0.01 µg/l	TM345	<0.02	<0.01	only and		
Alachlor	<0.01 µg/l	TM345	<0.02	<0.01 poses	20		
Prometryn	<0.01 µg/l	TM345	<0.02	section when he			
Telodrin	<0.01 µg/l	TM345	<0.02	THE COUNTY CO.01			
Terbutryn	<0.01 µg/l	TM345	0,	<b>₹</b> <0.01			
Chlorothalonil	<0.01 µg/l	TM345	<0.02 cm	<0.01			
Etrimphos	<0.01 µg/l	TM345	<0.02	<0.01			
Metazachlor	<0.01 µg/l		<0.02	<0.01			
Cyanazine	<0.01 µg/l		<0.02	<0.01			
Trietazine	<0.01 µg/l	TM345	<0.02	<0.01			
Coumaphos	<0.01 µg/l	TM345	<0.02	<0.01			
Phosphamidon I	<0.01 µg/l	TM345	<0.04	<0.02			
Phosphamidon II	<0.01 µg/l	TM345	<0.02	<0.01			
Dinitro-o-cresol	<0.1 µg/l	TM411	<0.1	<0.1			
Clopyralid	<0.04 µg/l		<0.04	<0.04			
MCPA	<0.05 µg/l	TM411	<0.05	<0.05			
Mecoprop	<0.04 µg/l	TM411	<0.04	<0.04			
Dicamba	<0.04 µg/l	TM411	<0.04	<0.04			
МСРВ	<0.05 µg/l	TM411	<0.05	<0.05			
2,4-DB	<0.1 µg/l	TM411	<0.1	<0.1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411	<0.05	<0.05			
Dichlorprop	<0.1 µg/l	TM411	<0.1	<0.1		•	



Results Legend # ISO17025 accredited.	(	Customer Sample Ref.	SW1	SW2			
M mCERTS accredited.  aq Aqueous / settled sample.		Donth (m)	0.00 0.00	0.00 0.00			
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
* Subcontracted - refer to subcontractor report to accreditation status.		Date Sampled Sample Time	13/05/2020	13/05/2020			
efficiency of the method. The results of individ	lual	Date Received	16/05/2020	16/05/2020			
compounds within samples aren't corrected for recovery	or the	SDG Ref	200516-40 22157384	200516-40 22157398			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22107004	22101000			
Component	LOD/Units	Method	0.05	2.25			
Triclopyr	<0.05 µg/l	TM411	<0.05	<0.05			
Fenoprop (Silvex)	<0.1 µg/l	TM411	<0.1	<0.1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05	<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05	<0.05			
Bromoxynil	<0.04 µg/l	TM411	<0.04	<0.04			
Benazolin	<0.04 µg/l	TM411	<0.04	<0.04			
loxynil	<0.05 µg/l	TM411	<0.05	<0.05			
Pentachlorophenol	<0.04 µg/l	TM411	<0.04	<0.04			
Fluoroxypyr	<0.1 µg/l	TM411	<0.1	<0.1			
					olly and other use.		
					14. 14 other		
				200	off of all.		
				Quit <sup>O</sup>	e <sup>e</sup>		
				single character day			
			<del>Ç</del> (	rinsight a			
			consent of s	or,			
			Conseil				

ALS

 SDG:
 200516-40
 Client Reference:
 P20-015
 Report Number:
 553007

 Location:
 Oldcourt Landfill
 Order Number:
 Z2085
 Superseded Report:

SVOC MS (W) - Aqueous							
Rosults Legend  # ISO17025 accredited.  M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.  Subcontracted - refor to subcontractor report accreditation status.  " " recovery of the surrogate standard to chee efficiency of the method. The results of indivi compounds within samples aren't corrected frecovery  (F) Trigger breach confirmed 1-345@ Sample deviation (see appendix)	: for :k the idual	Depth (m) Sample Type Date Sample If yee Date Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	SW1  0.00 - 0.00 Surface Water (SW) 13/05/2020 16/05/2020 200516-40 22157384	SW2 0.00 - 0.00 Surface Water (SW) 13/05/2020 16/05/2020 200516-40 22157398			
Component	LOD/Units	Method					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<2 #	<1 #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<2 #	<1 #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<2 #	<1 #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<2 #	<1 #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<2 #	<1 #	Ø1*		
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<2	<1	diterise.		
2-Chlorophenol (aq)	<1 µg/l	TM176	<2 #	<1 #	जीतं वाम् जीतं वाम्		
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<2 #	<1 00° 30°	e <sup>C</sup>		
2-Methylphenol (aq)	<1 µg/l	TM176	<2 #	insection partie #			
2-Nitroaniline (aq)	<1 µg/l	TM176	<2 #	inspired #			
2-Nitrophenol (aq)	<1 µg/l	TM176	<2 #	10%.			
3-Nitroaniline (aq)	<1 µg/l	TM176	<2 cattern #	* # <1 #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	- C2 #	<1			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<2 #	<1			
4-Chloroaniline (aq)	<1 µg/l	TM176	<2	<1			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<2 #	<1 #			
4-Methylphenol (aq)	<1 µg/l	TM176	<2 #	<1			
4-Nitroaniline (aq)	<1 µg/l	TM176	<2 #	<1 #			
4-Nitrophenol (aq)	<1 µg/l	TM176	<2	<1			
Azobenzene (aq)	<1 µg/l	TM176	<2 #	<1 #			
Acenaphthylene (aq)	<1 µg/l	TM176	<2 #	<1 #			
Acenaphthene (aq)	<1 µg/l	TM176	<2 #	<1			
Anthracene (aq)	<1 µg/l	TM176	<2 #	<1			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<2 #	<1 #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<2 #	<1			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<4 #	<2			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<2 #	<1 #			
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<2	<1			
			#	<u> </u>	1		

200516-40 Oldcourt Landfill Report Number: Superseded Report: SDG: Client Reference: P20-015 553007 Location: Order Number: Z2085

SVOC MS (W) - Aqueous	s						
Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
* Subcontracted - refer to subcontractor report accreditation status.	for	Date Sampled	13/05/2020	13/05/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of indivi-	dual	Sample Time Date Received	16/05/2020	16/05/2020			
compounds within samples aren't corrected for	or the	SDG Ref	200516-40	200516-40			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22157384	22157398			
Component	LOD/Units	Method					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<2	<1			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	* <2 #	<1			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<2 #	<1			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<2 #	<1			
Carbazole (aq)	<1 µg/l	TM176	<2 #	<1			
Chrysene (aq)	<1 µg/l	TM176	<2 #	<1			
Dibenzofuran (aq)	<1 µg/l	TM176	<2 #	<1			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<2 #	<1			
Diethyl phthalate (aq)	<1 µg/l	TM176	<2 #	<1			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<2 #	<1	7.115 <sup>©</sup> .		
Dimethyl phthalate (aq)	<1 µg/l	TM176	<2 #	<1 #	other		
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<10 #	<5 #	offer and		
Fluoranthene (aq)	<1 µg/l	TM176	<2 #	<1 purposition	20		
Fluorene (aq)	<1 µg/l	TM176	<2	citation "			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<2 #	inspired #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<2 <4 ×4	108.			
Pentachlorophenol (aq)	<1 µg/l	TM176	<2 ch	<1			
Phenol (aq)	<1 µg/l	TM176	<u>~2</u>	<1			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<2 #	<1 #			
Hexachloroethane (aq)	<1 µg/l	TM176	<2 #	<1 #			
Nitrobenzene (aq)	<1 µg/l	TM176	<2 #				
Naphthalene (aq)	<1 µg/l	TM176	<2 #				
Isophorone (aq)	<1 µg/l	TM176	<2 #				
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<2	<1			
Phenanthrene (aq)	<1 µg/l	TM176	<2 #				
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<2 #				
Pyrene (aq)	<1 µg/l	TM176	<2 #	<1 #			

200516-40 Oldcourt Landfill P20-015 Z2085 Report Number: Superseded Report: SDG: Client Reference: 553007 Location: Order Number:

VOC MS (W)							
Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
<ul> <li>Subcontracted - refer to subcontractor report accreditation status.</li> </ul>		Date Sampled	13/05/2020	13/05/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individual	dual	Sample Time Date Received	16/05/2020	16/05/2020			
compounds within samples aren't corrected for	or the	SDG Ref	200516-40 22157384	200516-40 22157398			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22107004	22101000			
Component	LOD/Units	Method	400	400			
Dibromofluoromethane**	%	TM208	109	109			
Toluene-d8**	%	TM208	104	103			
4-Bromofluorobenzene**	%	TM208	105	104			
Dichlorodifluoromethane	<1 µg/l	TM208	<1 #	<1 #			
Chloromethane	<1 µg/l	TM208	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208	<1 #	<1 #			
Bromomethane	<1 µg/l	TM208	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208	<1 #	<1 #	, <del>1</del> 50.		
Carbon disulphide	<1 µg/l	TM208	<1 #	<1 # <3	ast of other as		
Dichloromethane	<3 μg/l	TM208	<3 #	<3 #	office and		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 # <1	<1 OSE	, E		
trans-1,2-Dichloroethene	<1 μg/l	TM208	#	Cocitos Paris (18			
1,1-Dichloroethane cis-1,2-Dichloroethene	<1 µg/l	TM208 TM208		THE CONTROL #			
2,2-Dichloropropane	<1 µg/l	TM208	#	*** *1 *1			
Bromochloromethane	<1 μg/l	TM208	<1 Cansent or	<1			
Chloroform	<1 μg/l	TM208	*1 <1	<1			
1,1,1-Trichloroethane	<1 μg/l	TM208	<1	*1 <1			
1,1-Dichloropropene	<1 µg/l	TM208	<1 **	*1 <1			
Carbontetrachloride	<1 µg/l	TM208	<1	# <1			
1,2-Dichloroethane	<1 μg/l	TM208	- # <1	- # <1			
Benzene	<1 µg/l	TM208	<1	# <1			
Trichloroethene	<1 µg/l	TM208	<1	**************************************			
1,2-Dichloropropane	<1 µg/l	TM208	** <1	# <1			
Dibromomethane	<1 µg/l	TM208	** <1	# <1			
Bromodichloromethane	<1 µg/l	TM208	*1 <1	# <1			
cis-1,3-Dichloropropene	<1 μg/l	TM208	- # <1	- # <1			
Toluene	<1 μg/l	TM208	** <1	# <1			
trans-1,3-Dichloropropene	<1 μg/l	TM208	# <1	# <1			
1,1,2-Trichloroethane	<1 μg/l	TM208	# <1	# <1			
1,3-Dichloropropane	<1 μg/l	TM208	# <1	# <1			
I	I	1	#	#			

200516-40 Oldcourt Landfill P20-015 Z2085 Report Number: Superseded Report: SDG: Client Reference: 553007 Location: Order Number:

VOC MS (W)							
Results Legend # ISO17025 accredited.	(	Customer Sample Ref.	SW1	SW2			
M mCERTS accredited.  aq Aqueous' settled sample. diss.fillt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.  Subcontracted - refer to subcontractor representations.	irt for	Depth (m) Sample Type Date Sampled	0.00 - 0.00 Surface Water (SW) 13/05/2020	0.00 - 0.00 Surface Water (SW) 13/05/2020			
** % recovery of the surrogate standard to che efficiency of the method. The results of indi	vidual	Sample Time Date Received	16/05/2020	16/05/2020			
compounds within samples aren't corrected recovery	for the	SDG Ref Lab Sample No.(s)	200516-40 22157384	200516-40 22157398			
(F) Trigger breach confirmed  1-3•§@ Sample deviation (see appendix)		AGS Reference	22107001	22.107.000			
Component Tetrachloroethene	LOD/Units	Method TM208	<1	<1			
renaciioloeniene	ν ημη/	1101200	#	#			
Dibromochloromethane	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208	<1 #	<1 #			
Styrene	<1 µg/l	TM208	<1 #	<1 #			
Bromoform	<1 µg/l	TM208	<1 #	<1 *1	్లు.		
Isopropylbenzene	<1 µg/l	TM208	<1 #	<1 #	other		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #	<1 #	off and		
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #	<1 00°.	Septe		
Bromobenzene	<1 µg/l	TM208	<1	dianet,			
Propylbenzene	<1 µg/l	TM208	<1 # <i>a</i>	* iffe ght <1			
2-Chlorotoluene	<1 µg/l	TM208	<1 SH	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 consent of	<1 #			
4-Chlorotoluene	<1 µg/l	TM208	<del>9</del> "	<1 #			
tert-Butylbenzene	<1 µg/l	TM208	<1 #	<1			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208	<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1	<1			

Validated

### **CERTIFICATE OF ANALYSIS**

Report Number: Superseded Report: SDG: 200516-40 P20-015 553007 Client Reference: Location: Oldcourt Landfill Order Number: Z2085

# **Table of Results - Appendix**

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS  Acid Herbs in Water by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbern Water by GCMS
ot applicable.	subcontracted) performed at ALS Life Sciences Ltd Hawarder	(Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

ALS

 SDG:
 200516-40
 Client Reference:
 P20-015
 Report Number:
 553007

 Location:
 Oldcourt Landfill
 Order Number:
 Z2085
 Superseded Report:

# **Test Completion Dates**

		103
Lab Sample No(s)	22157384	22157398
Customer Sample Ref.	SW1	SW2
•		
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Туре	Surface Water	Surface Water
Acid Herbicides by GCMS	20-May-2020	20-May-2020
Ammonium Low	19-May-2020	19-May-2020
Anions by Kone (w)	18-May-2020	18-May-2020
BOD True Total	21-May-2020	21-May-2020
COD Unfiltered	18-May-2020	18-May-2020
Conductivity (at 20 deg.C)	20-May-2020	20-May-2020
Cyanide Comp/Free/Total/Thiocyanate	19-May-2020	19-May-2020
Dissolved Metals by ICP-MS	21-May-2020	21-May-2020
Dissolved Oxygen by Probe	20-May-2020	20-May-2020
Fluoride	18-May-2020	18-May-2020
Mercury Dissolved	18-May-2020	18-May-2020
Mineral Oil C10-40 Aqueous (W)	22-May-2020	22-May-2020
PCB Congeners - Aqueous (W)	22-May-2020	22-May-2020
Pesticides (Suite I) by GCMS	21-May-2020	21-May-2020
Pesticides (Suite II) by GCMS	21-May-2020	21-May-2020
Pesticides (Suite III) by GCMS	21-May-2020	21-May-2020
pH Value	19-May-2020	19-May-2020
Phosphate by Kone (w)	18-May-2020	18-May-2020
Suspended Solids	21-May-2020	21-May-2020
SVOC MS (W) - Aqueous	19-May-2020	19-May-2020
VOC MS (W)	18-May-2020	18-May-2020

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SDG: 200516-40 Client Reference: P20-015 Report Number: 553007 Location: Oldcourt Landfill Order Number: Z2085 Superseded Report:

Appendix

### General

- Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.
- 2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed
- 3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised
- 5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate
- 6. NDP No determination possible due to insufficient/unsuitable sample.
- 7. Results relate only to the items tested.
- 8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected
- 9. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.
- 10. Stones/debris are not routinely removed. We always endeavour to For representative sub sample from the received sample.
- representative sub sample from the received sample.

  11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised. OTI
- 12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.
- 14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
- 15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
- 16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample

17. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

#### 18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

#### 19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres wing ALS (Hawarden) in-house method of transmitted/polarised light microscopy and

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of selections.

ALS (Hawarden) in house 1000 and 1000 are 1000 and 1000 and 1000 are 1000 and 1000 an stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name			
Chrysof le	White Asbestos			
Amosite	Brow n Asbests			
Cro d dolite	Blue Asbe stos			
Fibrous Act nolite	-			
Fib to us Anthop hyll ite	-			
Fibrous Tremolite	-			

# Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

### Respirable Fibres

Respirable fibres are defined as fibres of <3  $\mu m$  diameter, longer than 5  $\mu m$  and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung

Standing Committee of Analysts, The Quantification of Asbestos in Soil (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

15:40:32 22/05/2020 Modification Date: 22/05/2020 EPA Export 19-10-2021:02:41:46 Page 16 of 16



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US

> Tel: (01244) 528700 Fax: (01244) 528701

email: haward encustomers ervices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney 3rd Floor North Park Offices North Park Business Park North Road Dublin Dublin 11

Attention: Gary Lawlor

# **CERTIFICATE OF ANALYSIS**

Date of report Generation:23 June 2020Customer:Fehily TimoneySample Delivery Group (SDG):200611-49Your Reference:P20-015Location:Oldcourt LandfillReport No:556352

We received 2 samples on Thursday June 11, 2020 and 2 of these samples were scheduled for analysis which was completed on Tuesday June 23, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALSCLife Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

**Operations Manager** 







Validated

SDG: 200611-49 Client Reference: P20-015 Report Number: 556352 Location: Oldcourt Landfill Z2085 Superseded Report: Order Number:

# **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22287256	SW1		0.00 - 0.00	10/06/2020
22287270	SW2		0.00 - 0.00	10/06/2020

Maximum Sample/Coolbox Temperature (°C):

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

10.0

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



ALS

SDG: 200611-49 Client Reference: P20-015 Report Number: 556352 Oldcourt Landfill Z2085 Superseded Report: Location: Order Number: Results Legend 22287256 22287270 Lab Sample No(s) X Test No Determination Possible Customer SW1 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 250ml BOD (ALE212) 0.5l glass bottle (ALE227) 0.5l glass bottle (ALE227) H2SO4 (ALE244) HNO3 Filtered (ALE204) NaOH (ALE245) DW - Drinking Water Non-regulatory NaOH (ALE245) (ALE208) 250ml BOD (ALE212) Vial (ALE297) Vial (ALE297) 500ml Plastic UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Acid Herbicides by GCMS All NDPs: 0 Tests: 2 έx Х Ammonium Low All NDPs: 0 Tests: 2 Χ Anions by Kone (w) All NDPs: 0 Tests: 2 X X BOD True Total All NDPs: 0 Tests: 2 X COD Unfiltered All NDPs: 0 Tests: 2 X Χ Conductivity (at 20 deg.C) All NDPs: 0 Tests: 2 Х Х Cyanide Comp/Free/Total/Thiocyanate All NDPs: 0 Tests: 2 Х Dissolved Metals by ICP-MS All NDPs: 0 Tests: 2 X X Dissolved Oxygen by Probe All NDPs: 0 Tests: 2 Χ Х Fluoride All NDPs: 0 Tests: 2 Χ X Mercury Dissolved All NDPs: 0 Tests: 2 X X Mineral Oil C10-40 Aqueous (W) All NDPs: 0 Tests: 2 Х Х PCB Congeners - Aqueous (W) All NDPs: 0 Tests: 2 Х Х Pesticides (Suite I) by GCMS All NDPs: 0 Tests: 2 Х Х Pesticides (Suite II) by GCMS All NDPs: 0 Tests: 2 X Χ

### Validated

### **CERTIFICATE OF ANALYSIS**

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SDG: 200611-49 Client Reference: P20-015 Report Number: 556352 Location: Oldcourt Landfill Z2085 Superseded Report: Order Number: Results Legend 22287256 22287270 Lab Sample No(s) X Test No Determination Possible Customer SW1 SW2 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic
(ALE208)
250ml BOD
(ALE212)
0.5l glass bottle
(ALE227) 0.5l glass bottle (ALE227) H2SO4 (ALE244) HNO3 Filtered (ALE204) 500ml Plastic (ALE208) 250ml BOD (ALE212) NaOH (ALE245) NaOH (ALE245) DW - Drinking Water Non-regulatory Vial (ALE297) Vial (ALE297) UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Pesticides (Suite III) by GCMS All NDPs: 0 Tests: 2 Χ ĺχ pH Value All NDPs: 0 Tests: 2 X X Phosphate by Kone (w) All NDPs: 0 Tests: 2 X Suspended Solids All NDPs: 0 Tests: 2 Х SVOC MS (W) - Aqueous All NDPs: 0 Tests: 2 Χ VOC MS (W) All NDPs.0 Tests: 2 Х Х



Results Legend		Customer Sample Per	0144	OWO	1	1	
# ISO17025 accredited. M mCERTS accredited.		Customer Sample Ref.	SW1	SW2			
aq Aqueous / settled sample.  diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report	for	Sample Type	Surface Water (SW)	Surface Water (SW)			
accreditation status.		Date Sampled Sample Time	10/06/2020	10/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individual to the surrogate standard to check efficiency of the method. The results of individual to the surrogate standard to check	dual	Date Received	11/06/2020	11/06/2020			
compounds within samples aren't corrected for recovery	or the	SDG Ref	200611-49 22287256	200611-49 22287270			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22207230	22201210			
Component	LOD/Units	Method					
Suspended solids, Total	<2 mg/l	TM022	3.45 #	2.3			
BOD, unfiltered	<1 mg/l	TM045	<1 #	<1 #			
Oxygen, dissolved	<0.3 mg/l	TM046	9.36	9.71			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.0182	0.0304 #			
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5			
COD, unfiltered	<7 mg/l	TM107	<7	<7			
Conductivity @ 20 deg.C	<0.005	TM120	0.126	0.137			
A 1 / P 610	mS/cm	T111=0	#	# # #			
Arsenic (diss.filt)	<0.5 µg/l	TM152	11.7	12.2			
Barium (diss.filt)	<0.2 µg/l	TM152	3.86 #	3.73 #			
Boron (diss.filt)	<10 µg/l	TM152	<10 #	<10 #	12°C.		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08 #	dina dihernia		
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	ould au,		
Copper (diss.filt)	<0.3 µg/l	TM152	0.428 #	0.481			
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2	itiens ret ieur			
Manganese (diss.filt)	<3 µg/l	TM152	4.32 #	Kinsper Q3			
Nickel (diss.filt)	<0.4 µg/l	TM152	<0.4	<b>(0.4</b> +			
Phosphorus (diss.filt)	<10 µg/l	TM152	16.6 ent #	18.2 #			
Selenium (diss.filt)	<1 µg/l	TM152	<b>4</b>	<1 #			
Thallium (diss.filt)	<2 µg/l	TM152	<2 #	<2 #			
Zinc (diss.filt)	<1 µg/l	TM152	4.78 #	5.15 #			
Sodium (Dis.Filt)	<0.076 mg/	TM152	7.87 #	8.11 #			
Magnesium (Dis.Filt)	<0.036 mg/	TM152	3.41 #	3.54 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.854 #	0.93			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	12.7	14			
Iron (Dis.Filt)	<0.019 mg/	TM152	<0.019	<0.019			
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100	<100			
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05			
Chloride	<2 mg/l	TM184	12.7	12.8			
Sulphate (soluble) as S	<1 mg/l	TM184	2.13 #	2.27			
PCB congener 28	<0.015 µg/l	I TM197	<0.015	<0.015			
PCB congener 52	<0.015 µg/	I TM197	<0.015	<0.015			
PCB congener 101	<0.015 µg/	I TM197	<0.015	<0.015			

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Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted - refer to subcontractor i	report for	Depth (m) Sample Type Date Sampled	0.00 - 0.00 Surface Water (SW) 10/06/2020	0.00 - 0.00 Surface Water (SW) 10/06/2020			
accreditation status.  ** % recovery of the surrogate standard to efficiency of the method. The results of	individual	Sample Time Date Received	11/06/2020	11/06/2020			
compounds within samples aren't corre recovery (F) Trigger breach confirmed	ected for the	SDG Ref Lab Sample No.(s)	200611-49 22287256	200611-49 22287270			
1-3+§@ Sample deviation (see appendix)  Component	LOD/Unit						
PCB congener 118	<0.015 μς	g/l TM197	<0.015	<0.015			
PCB congener 138	<0.015 μς	g/l TM197	<0.015	<0.015			
PCB congener 153	<0.015 μς	g/l TM197	<0.015	<0.015			
PCB congener 180	<0.015 μο	g/l TM197	<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 μο		<0.105	<0.105			
Cyanide, Total	<0.05 mg		<0.05	<0.05			
pH	<1 pH Uni		7.49 #	7.61 #			
Trifluralin	<0.01 µg	/I TM343	<0.02	<0.02			
alpha-HCH	<0.01 µg	/I TM343	<0.02	<0.02			
gamma-HCH (Lindane)	<0.01 µg		<0.01	<0.01	, 115°C.		
Heptachlor	<0.01 µg	/I TM343	<0.01	<0.01	Odly, and other use.		
Aldrin	<0.01 µg	/I TM343	<0.01	<0.01	only and		
beta-HCH	<0.01 µg	/I TM343	<0.01	THIP THI	o o		
Isodrin	<0.01 µg	/I TM343	<0.01	11000 Ex.			
delta-HCH	<0.01 µg	/I TM343	<0.02	Titight 0.02			
Heptachlor epoxide	<0.01 µg	/I TM343	<0.02	<b>₹</b> <0.02			
o,p'-DDE	<0.01 µg	/I TM343	<0.02 ent	<0.02			
Endosulphan I	<0.01 µg	/I TM343	<0.01	<0.01			
trans-Chlordane	<0.01 µg	/I TM343	<0.02	<0.02			
cis-Chlordane	<0.01 µg	/I TM343	<0.02	<0.02			
p,p'-DDE	<0.01 µg	/I TM343	<0.02	<0.02			
Dieldrin	<0.01 µg	/I TM343	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg	/I TM343	<0.02	<0.02			
Endrin	<0.01 µg	/I TM343	<0.02	<0.02			
o,p'-DDT	<0.01 µg	/I TM343	<0.02	<0.02			
p,p'-DDD (TDE)	<0.01 µg	/I TM343	<0.01	<0.01			
Endosulphan II	<0.02 µg	/I TM343	<0.02	<0.02			
p,p'-DDT	<0.01 µg	/I TM343	<0.02	<0.02			
o,p'-Methoxychlor	<0.01 µg	/I TM343	<0.04	<0.04			
p,p'-Methoxychlor	<0.01 µg	/I TM343	<0.06	<0.06			
Endosulphan Sulphate	<0.02 µg	/I TM343	<0.02	<0.02			
Permethrin I	<0.01 μg	/I TM343	<0.02	<0.02			
Permethrin II	<0.01 µg	/I TM343	<0.01	<0.01			

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Results Legend		Customer Sample Ref.	SW1	SW2	İ	<u> </u>	
# ISO17025 accredited. M mCERTS accredited.			<b>5</b> .	0.112			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report	t for	Sample Type Date Sampled	Surface Water (SW) 10/06/2020	Surface Water (SW) 10/06/2020			
accreditation status.  ** % recovery of the surrogate standard to chec	ck the	Sample Time	10/00/2020	10/00/2020			
efficiency of the method. The results of indiv compounds within samples aren't corrected		Date Received SDG Ref	11/06/2020 200611-49	11/06/2020 200611-49			
recovery (F) Trigger breach confirmed		Lab Sample No.(s)	22287256	22287270			
1-3+§@ Sample deviation (see appendix)	1.00/11-16-	AGS Reference					
1,3,5-Trichlorobenzene	LOD/Units <0.01 μg/l	_	<0.01	<0.01			
1,0,0	υ.υ. μη.		0.0.	0.01			
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01			
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01			
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01			
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	Zuze.		
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	other		
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01 چو	77 70,		
Triallate	<0.01 µg/l	TM344	<0.01	<0.01 control of the	200		
Atrazine	<0.01 µg/l	TM344	<0.01	ectioning to			
Simazine	<0.01 µg/l	TM344	~ \	100			
Disulfoton	<0.01 µg/l	TM344	۷ کو	<0.01 <b>₹</b>			
Propetamphos	<0.01 µg/l	TM344	<0.01 entor	<0.01			
Chlorpyriphos-methyl	<0.01 µg/l		< <del>0</del> .01	<0.01			
Dimethoate	<0.01 µg/l		<0.01	<0.01			
Pirimiphos-methyl	<0.01 µg/l		<0.01	<0.01			
Chlorpyriphos	<0.01 µg/l	TM344	<0.01	<0.01			
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Malathion	<0.01 µg/l		<0.01	<0.01			
Fenthion	<0.01 µg/l		<0.01	<0.01			
Fenitrothion	<0.01 µg/l		<0.01	<0.01			
Triadimefon	<0.01 µg/l		<0.01	<0.01			
Pendimethalin	<0.01 µg/l		<0.01	<0.01			
Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01			
Ethion	<0.01 µg/l	TM344	<0.01	<0.01			
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01			
10:25:26 22/06/2020		_					

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Results Legend		Customer Sample Ref.	SW1	SW2	į	1	
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample.			SW1	GWZ			
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report	t for	Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
accreditation status.  ** % recovery of the surrogate standard to chec	k the	Date Sampled Sample Time	10/06/2020	10/06/2020			
efficiency of the method. The results of indivi compounds within samples aren't corrected f recovery		Date Received SDG Ref	11/06/2020 200611-49	11/06/2020 200611-49			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22287256	22287270			
Component Triazophos	LOD/Units <0.01 μg/l	Method TM344	<0.01	<0.01			
Phosalone	<0.01 µg/l	TM344	<0.01	<0.01			
Filosalone							
Azinphos methyl	<0.02 µg/l	TM344	<0.02	<0.02			
Azinphos ethyl	<0.02 µg/l	TM344	<0.02	<0.02			
Etridiazole	<0.01 µg/l	TM345	<0.01	<0.01			
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01	<0.01			
Propachlor	<0.01 µg/l	TM345	<0.01	<0.01			
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01	<0.01			
Omethoate	<0.01 µg/l	TM345	<0.01	<0.01			
Propazine	<0.01 µg/l	TM345	<0.01	<0.01	0.		
Propyzamide	<0.01 µg/l	TM345	<0.01	<0.01	netise.		
Alachlor	<0.01 µg/l	TM345	<0.01	<0.01	offst and other use.		
Prometryn	<0.01 µg/l	TM345	<0.01	<0.01 005.	Sign Sign		
Telodrin	<0.01 µg/l	TM345	<0.01	<0.01  <0.01  Output			
Terbutryn	<0.01 µg/l	TM345	<0.01	. 25 0 000			
Chlorothalonil	<0.01 µg/l	TM345	<0.01	17 tight 6.01			
			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	V 40.01			
Etrimphos	<0.01 µg/l	TM345	<0.01 spit	<0.01			
Metazachlor	<0.01 µg/l	TM345	<0.01	<0.01			
Cyanazine	<0.01 µg/l	TM345	<0.01	<0.01			
Trietazine	<0.01 µg/l	TM345	<0.01	<0.01			
Coumaphos	<0.01 µg/l	TM345	<0.01	<0.01			
Phosphamidon I	<0.01 µg/l	TM345	<0.01	<0.01			
Phosphamidon II	<0.01 µg/l	TM345	<0.01	<0.01			
Dinitro-o-cresol	<0.1 µg/l	TM411	<0.2	<0.2			
Clopyralid	<0.04 µg/l	TM411	<0.08	<0.08			
MCPA	<0.05 µg/l	TM411	<0.1	<0.1			
Mecoprop	<0.04 µg/l	TM411	<0.08	<0.08			
Dicamba	<0.04 µg/l	TM411	<0.08	<0.08			
МСРВ	<0.05 µg/l	TM411	<0.1	<0.1			
2,4-DB	<0.1 µg/l	TM411	<0.2	<0.2			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411	<0.1	<0.1			
Dichlorprop	<0.1 µg/l	TM411	<0.2	<0.2			
Triclopyr	<0.05 µg/l	TM411	<0.1	<0.1			



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Results Legend					•		
# ISO17025 accredited.  M mCERTS accredited.		Customer Sample Ref.	SW1	SW2			
aq Aqueous / settled sample.		Dorth (m)	0.00 0.00	0.00 0.00			
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
<ul> <li>Subcontracted - refer to subcontractor report accreditation status.</li> </ul>	for	Date Sampled	10/06/2020	10/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individual standard to check efficiency of the method.	k the dual	Sample Time Date Received	. 11/06/2020	11/06/2020			
compounds within samples aren't corrected for	or the	SDG Ref	200611-49	200611-49			
recovery (F) Trigger breach confirmed		Lab Sample No.(s) AGS Reference	22287256	22287270			
1-3+§@ Sample deviation (see appendix)  Component	LOD/Units	Method					
Fenoprop (Silvex)	<0.1 µg/l	TM411	<0.2	<0.2			
Conserve (Conserve	J p.3						
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.1	<0.1			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l		<0.1	<0.1			
Bromoxynil	<0.04 µg/l		<0.08	<0.08			
Benazolin	<0.04 µg/l		<0.08	<0.08			
loxynil	<0.05 µg/l		<0.1	<0.1			
Pentachlorophenol	<0.04 µg/l		<0.08	<0.08			
Fluoroxypyr	<0.1 µg/l	TM411	<0.2	<0.2			
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					only and other use.		
					off of all		
				A Purpuli	Ç		
				sale dinet			
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			consent of s	.07			
			Courser				
10.25.26.22/06/2020							

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 SDG:
 200611-49
 Client Reference:
 P20-015
 Report Number:
 556352

 Location:
 Oldcourt Landfill
 Order Number:
 Z2085
 Superseded Report:

SVOC MS (W) - Aqueous  Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2				
M mCERTS accredited. aq Aqueous / settled sample.								
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)				
<ul> <li>* Subcontracted - refer to subcontractor report for accreditation status.</li> </ul>	or	Date Sampled	10/06/2020	10/06/2020				
** % recovery of the surrogate standard to check to efficiency of the method. The results of individual.	ıal	Sample Time Date Received	11/06/2020	11/06/2020				
compounds within samples aren't corrected for recovery	the	SDG Ref	200611-49	200611-49				
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22287256	22287270				
Component	LOD/Units							
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<1	#			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	π			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	#			
			#		#			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<1	#			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<1	#	ze.		
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1 #	<1	#	other		
2-Chlorophenol (aq)	<1 µg/l	TM176	<1 #	<1	#	जीतं, अय्ये विश्वास		
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1 #	<1 pt		20		
2-Methylphenol (aq)	<1 µg/l	TM176	<1 #	dio vet	#			
2-Nitroaniline (aq)	<1 µg/l	TM176	<1 # <sub>6</sub>	insint .	#			
2-Nitrophenol (aq)	<1 µg/l	TM176	W.	<b>2</b> <1	#			
3-Nitroaniline (aq)	<1 µg/l	TM176	<1 consent or	<1	#			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	#	<1	#			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	<1				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1 #	<1	#			
4-Methylphenol (aq)	<1 µg/l	TM176	<1 #	<1	#			
4-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<1	#			
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	<1				
Azobenzene (aq)	<1 µg/l	TM176	<1 #	<1	#			
Acenaphthylene (aq)	<1 µg/l	TM176	<1 #	<1	#			
Acenaphthene (aq)	<1 µg/l	TM176	<1 #	<1	#			
Anthracene (aq)	<1 µg/l	TM176	<1 #	<1	#			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1 #	<1	#			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1 #	<1	#			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2 #	<2	#			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1 #	<1	#			
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1 #	<1	#			

200611-49 Oldcourt Landfill P20-015 Z2085 Report Number: Superseded Report: SDG: Client Reference: 556352 Location: Order Number:

SVOC MS (W) - Aqueous	6						
Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report if accreditation status.	for	Sample Type Date Sampled	Surface Water (SW) 10/06/2020	Surface Water (SW) 10/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individ	lual	Sample Time Date Received	11/06/2020	11/06/2020			
compounds within samples aren't corrected for recovery  (F) Trigger breach confirmed	or the	SDG Ref Lab Sample No.(s)	200611-49 22287256	200611-49 22287270			
1-3+§@ Sample deviation (see appendix)  Component	LOD/Units	AGS Reference					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1 #	<1			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<1 #	<1			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Carbazole (aq)	<1 µg/l	TM176	<1 #	<1			
Chrysene (aq)	<1 µg/l	TM176	<1 #	<1			
Dibenzofuran (aq)	<1 µg/l	TM176	<1 #	<1			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1 #	<1 #			
Diethyl phthalate (aq)	<1 µg/l	TM176	<1 #	<1			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<1 #	<1 #	7115°C.		
Dimethyl phthalate (aq)	<1 µg/l	TM176	<1 #	<1 #	offer and other use.		
n-Dioctyl phthalate (aq)	<5 μg/l	TM176	<5	<5 #	only and		
Fluoranthene (aq)	<1 µg/l	TM176	<1 #	<1 post	20		
Fluorene (aq)	<1 µg/l	TM176	<1 #	ection Period			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 #	<pre>&lt;1 prepared to the control of t</pre>			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1	्रि <sup>र</sup> <1 #			
Pentachlorophenol (aq)	<1 µg/l	TM176	<1 SHEETH	<1			
Phenol (aq)	<1 µg/l	TM176	প	<1			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<1 #	<1 #			
Hexachloroethane (aq)	<1 µg/l	TM176	<1 #	<1 #			
Nitrobenzene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Naphthalene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Isophorone (aq)	<1 µg/l	TM176	<1 #	<1 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<1	<1			
Phenanthrene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1 #	<1 #			
Pyrene (aq)	<1 µg/l	TM176	<1 #	<1 #			

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VOC MS (W)					_		
Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample.		- "					
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
* Subcontracted - refer to subcontractor report accreditation status.	for	Date Sampled	10/06/2020	10/06/2020			
** % recovery of the surrogate standard to chec efficiency of the method. The results of indivi	dual	Sample Time Date Received	. 11/06/2020	11/06/2020			
compounds within samples aren't corrected f recovery	for the	SDG Ref	200611-49	200611-49			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22287256	22287270			
Component	LOD/Units						
Dibromofluoromethane**	%	TM208	108	108			
Toluene-d8**	%	TM208	100	100			
4-Bromofluorobenzene**	%	TM208	100	102			
Dichlorodifluoromethane	<1 µg/l	TM208	<1	<1			
Chloromethane	<1 µg/l	TM208	# <1	‡ <1	f		
Vinyl chloride	<1 μg/l	TM208	* <1	- - - - 1	<u> </u>		
			#	ŧ.	1		
Bromomethane	<1 µg/l	TM208	<1 #	<1 #	1		
Chloroethane	<1 µg/l	TM208	<1 #	<1 #	ŧ		
Trichlorofluoromethane	<1 µg/l	TM208	<1 #	<1 #	£		
1,1-Dichloroethene	<1 µg/l	TM208	<1 #	<1 #	: 350.		
Carbon disulphide	<1 µg/l	TM208	<1 #	<1 #	other		
Dichloromethane	<3 µg/l	TM208	<3 #	<3	July all,		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #	<1 05°	ited .		
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #	<1 recitor purples	:		
1,1-Dichloroethane	<1 µg/l	TM208	<1 # <sub>6</sub>	insper en			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 *#	<i>∞</i> <1			
2,2-Dichloropropane	<1 µg/l	TM208	<1 catsent of	<1			
Bromochloromethane	<1 µg/l	TM208	#	<1 #	±		
Chloroform	<1 µg/l	TM208	<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #	<1 #	:		
1,1-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #	:		
Carbontetrachloride	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208	<1 #	<1 #			
Benzene	<1 µg/l	TM208	<1 #	<1 #	1		
Trichloroethene	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208	<1 #	<1			
Bromodichloromethane	<1 µg/l	TM208	<1 #	<1 *			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #			
Toluene	<1 µg/l	TM208	<1 #	<1			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #	<1			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #	<1 *			
1,3-Dichloropropane	<1 µg/l	TM208	<1	<1			
			#	#	• [		

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VOC MS (W)							
Results Legend # IS017025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
* Subcontracted - refer to subcontractor repo accreditation status.	ort for	Date Sampled	10/06/2020	10/06/2020			
** % recovery of the surrogate standard to che efficiency of the method. The results of indi		Sample Time Date Received	11/06/2020	11/06/2020			
compounds within samples aren't corrected recovery		SDG Ref	200611-49	200611-49			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22287256	22287270			
Component	LOD/Units	Method					
Tetrachloroethene	<1 µg/l	TM208	<1	<1			
5" "	4 0	T1 1000	#	#			
Dibromochloromethane	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1			
,,,,	1 1 1 1 1 1		#	#			
Chlorobenzene	<1 µg/l	TM208	<1	<1			
			#	#			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1			
Ethylbenzene	<1 µg/l	TM208	# <1	# <1			
Lutyibenzene	ν μg/ι	110200	#	#			
m,p-Xylene	<1 µg/l	TM208	<1	<1			
			#	#			
o-Xylene	<1 µg/l	TM208	<1 "	<1 ,,,			
Churana	24 //	TMOOO	#	#		-	<del>                                     </del>
Styrene	<1 µg/l	TM208	<1 #	<1 #			
Bromoform	<1 µg/l	TM208	<1	<1			
	1.5		#	#	use.		
Isopropylbenzene	<1 µg/l	TM208	<1	<1	otherus		
440074 11 11	4 7	71,1000	#	#	74. 00		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #	<1 #	जीते. जाते हेर्		
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1 05	200		
1,2,0 111011101001000010	η μ	1111200	#	<1 post			
Bromobenzene	<1 µg/l	TM208	<1	<1 post of the state of the sta			
			#	ect wife #			
Propylbenzene	<1 µg/l	TM208	<1	All All			
2-Chlorotoluene	<1 µg/l	TM208	<1	100 ×1			
2 Onlorotolucite	-1 μg/1	TIVIZOO	₩	#			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 contact #	<1			
			COURT #	#			
4-Chlorotoluene	<1 µg/l	TM208	₹1	<1 "			
tert-Butylbenzene	<1 µg/l	TM208	# <1	* <1			<del>                                     </del>
tert-butyiberizerie	~1 μg/1	I IVIZUO	- "	1			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1			
			#	#			
sec-Butylbenzene	<1 µg/l	TM208	<1	<1 "			
4-iso-Propyltoluene	<1 µg/l	TM208	# <1	# <1			
4-iso-Propylloluerie	~1 μg/1	I IVIZUO	<u> </u>	#			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1			
			#	#			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1 "			
n-Butylbenzene	<1 ug/l	TM208	# <1	* <1			
n-butylbenzene	<1 µg/l	I IVIZUO	<u> </u>	#			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1			
			#	#			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1			
4.0.4 Triabless have see	*4!!	TM000	-11	-4			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1			
	1.5		#	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1			
N. 10 1	1	T1 1000	#	#			$\vdash$
Naphthalene	<1 µg/l	TM208	<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1			<del>                                     </del>
, ,,	ייניין י		#	#		 	<u>                                      </u>
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1	<1			
					ļ		





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# **Table of Results - Appendix**

TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690:	
	Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter  Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbern Water by GCMS
t applicable. I testing (unless si	ubcontracted) performed at ALS Life Sciences Ltd Hawarder	(Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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# **Test Completion Dates**

		163
Lab Sample No(s)	22287256	22287270
Customer Sample Ref.	SW1	SW2
400 D-5		
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Туре	Surface Water	Surface Water
Acid Herbicides by GCMS	23-Jun-2020	23-Jun-2020
Ammonium Low	19-Jun-2020	19-Jun-2020
Anions by Kone (w)	12-Jun-2020	12-Jun-2020
BOD True Total	17-Jun-2020	17-Jun-2020
COD Unfiltered	21-Jun-2020	21-Jun-2020
Conductivity (at 20 deg.C)	19-Jun-2020	19-Jun-2020
Cyanide Comp/Free/Total/Thiocyanate	16-Jun-2020	16-Jun-2020
Dissolved Metals by ICP-MS	19-Jun-2020	19-Jun-2020
Dissolved Oxygen by Probe	17-Jun-2020	17-Jun-2020
Fluoride	12-Jun-2020	12-Jun-2020
Mercury Dissolved	12-Jun-2020	12-Jun-2020
Mineral Oil C10-40 Aqueous (W)	19-Jun-2020	19-Jun-2020
PCB Congeners - Aqueous (W)	19-Jun-2020	19-Jun-2020
Pesticides (Suite I) by GCMS	18-Jun-2020	18-Jun-2020
Pesticides (Suite II) by GCMS	17-Jun-2020	17-Jun-2020
Pesticides (Suite III) by GCMS	17-Jun-2020	17-Jun-2020
pH Value	18-Jun-2020	18-Jun-2020
Phosphate by Kone (w)	12-Jun-2020	12-Jun-2020
Suspended Solids	22-Jun-2020	22-Jun-2020
SVOC MS (W) - Aqueous	16-Jun-2020	16-Jun-2020
VOC MS (W)	20-Jun-2020	20-Jun-2020

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Location: Oldcourt Landfill Order Number: Z2085 Superseded Report:

**Appendix** 

# General

- 1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.
- 2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.
- 3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
- 5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.
- 6. NDP No determination possible due to insufficient/unsuitable sample.
- 7. Results relate only to the items tested.
- 8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content
- 9. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.
- 10. Stones/debris are not routinely removed. We always endeavour to representative sub sample from the received sample.
- 11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
- 12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.
- 14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
- 15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
- 16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

#### 18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

#### 19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name				
Chrysof le	White Asbestos				
Amosite	Brow nAsbests				
Cro d dolite	Blue Asbe stos				
Fibrous Act nolite	-				
Fib to us Anthop hyll ite	-				
Fibrous Tremolite	-				

# Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

### Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, The Quantification of Asbestos in Soil (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside

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CH5 3US

email: hawardencustomerservices@alsglobal.com Website: www.alsenvironmental.co.uk

Fehily Timoney 3rd Floor North Park Offices North Park Business Park North Road Dublin Dublin 11

Attention: Gary Lawlor

# **CERTIFICATE OF ANALYSIS**

10 July 2020 Date of report Generation: Fehily Timoney **Customer:** 200701-66 Sample Delivery Group (SDG): P20-015 Your Reference: Location: Oldcourt Landfill 558449 Report No:

We received 2 samples on Wednesday July 01, 2020 and 2 of these samples were scheduled for analysis which was completed on Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data the scope of ISO 17025 accreditation. Thursday July 09, 2020. expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALSC life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

The reported results relate to the sample supplied, and on the basis that this data is All sample data is provided by the customer.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan **Operations Manager** 







Validated

SDG: 200701-66 Client Reference: P20-015 Report Number: 558449 Location: Oldcourt Landfill Z2085 Superseded Report: Order Number:

# **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22402719	SW1		0.00 - 0.00	30/06/2020
22402728	SW2		0.00 - 0.00	30/06/2020

Maximum Sample/Coolbox Temperature (°C):

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining

a temperature of (5±3)°C.

12.6

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



ALS

SDG: 200701-66 Client Reference: P20-015 Report Number: 558449 Oldcourt Landfill Z2085 Superseded Report: Location: Order Number: Results Legend 22402719 22402728 Lab Sample No(s) X Test No Determination Possible Customer SW1 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 250ml BOD (ALE212) 0.5l glass bottle (ALE227) 0.5l glass bottle (ALE227) H2SO4 (ALE244) HNO3 Filtered (ALE204) NaOH (ALE245) DW - Drinking Water Non-regulatory NaOH (ALE245) (ALE208) 250ml BOD (ALE212) Vial (ALE297) Vial (ALE297) 500ml Plastic UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Acid Herbicides by GCMS All NDPs: 0 Tests: 2 έx Х Ammonium Low All NDPs: 0 Tests: 2 Χ Anions by Kone (w) All NDPs: 0 Tests: 2 X X BOD True Total All NDPs: 0 Tests: 2 X COD Unfiltered All NDPs: 0 Tests: 2 X Χ Conductivity (at 20 deg.C) All NDPs: 0 Tests: 2 Х Х Cyanide Comp/Free/Total/Thiocyanate All NDPs: 0 Tests: 2 Х Dissolved Metals by ICP-MS All NDPs: 0 Tests: 2 X X Dissolved Oxygen by Probe All NDPs: 0 Tests: 2 Χ Х Fluoride All NDPs: 0 Tests: 2 Χ X Mercury Dissolved All NDPs: 0 Tests: 2 X X Mineral Oil C10-40 Aqueous (W) All NDPs: 0 Tests: 2 Х Х PCB Congeners - Aqueous (W) All NDPs: 0 Tests: 2 Х Х Pesticides (Suite I) by GCMS All NDPs: 0 Tests: 2 Х Х Pesticides (Suite II) by GCMS All NDPs: 0 Tests: 2 X Χ

### Validated

### **CERTIFICATE OF ANALYSIS**

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SDG: 200701-66 Client Reference: P20-015 Report Number: 558449 Location: Oldcourt Landfill Z2085 Superseded Report: Order Number: Results Legend 22402719 22402728 Lab Sample No(s) X Test No Determination Possible Customer SW1 SW2 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 0.00 - 0.00 0.00 - 0.00 SA - Saline Water Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic
(ALE208)
250ml BOD
(ALE212)
0.5l glass bottle
(ALE227) 0.5l glass bottle (ALE227) H2SO4 (ALE244) HNO3 Filtered (ALE204) 500ml Plastic (ALE208) 250ml BOD (ALE212) NaOH (ALE245) NaOH (ALE245) DW - Drinking Water Non-regulatory Vial (ALE297) Vial (ALE297) UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type WS Pesticides (Suite III) by GCMS All NDPs: 0 Tests: 2 Χ ĺχ pH Value All NDPs: 0 Tests: 2 X X Phosphate by Kone (w) All NDPs: 0 Tests: 2 X Suspended Solids All NDPs: 0 Tests: 2 Х SVOC MS (W) - Aqueous All NDPs: 0 Tests: 2 Χ VOC MS (W) All NDPs.0 Tests: 2 Х Х



Results Legend		Puntomor Commit Dec			· · · · · · · · · · · · · · · · · · ·		
# ISO17025 accredited.  M mCERTS accredited.	(	Customer Sample Ref.	SW1	SW2			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report	for	Sample Type Date Sampled	Surface Water (SW) 30/06/2020	Surface Water (SW) 30/06/2020			
accreditation status.  ** % recovery of the surrogate standard to check efficiency of the method. The results of individence of the method.		Sample Time					
compounds within samples aren't corrected for recovery		Date Received SDG Ref	01/07/2020 200701-66	01/07/2020 200701-66			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22402719	22402728			
Component	LOD/Units	Method	.0	0.45			
Suspended solids, Total	<2 mg/l	TM022	<2 #	3.15 #			
BOD, unfiltered	<1 mg/l	TM045	<1 #	<1 #			
Oxygen, dissolved	<0.3 mg/l	TM046	10.9	12.6			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.0181	0.034			
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5			
COD, unfiltered	<7 mg/l	TM107	<7	<7			
Conductivity @ 20 deg.C	<0.02	TM120	0.133	0.134			
	mS/cm		#	#			
Arsenic (diss.filt)	<0.5 µg/l	TM152	13.1	13.2			
Barium (diss.filt)	<0.2 µg/l	TM152	4.01 #	4.04 #			
Boron (diss.filt)	<10 µg/l	TM152	12.7 #	11.4	ږي.		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08	otherus		
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	only any		
Copper (diss.filt)	<0.3 µg/l	TM152	0.621	0.495	edic		
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2	150,2° 16° "			
Manganese (diss.filt)	<3 µg/l	TM152	<3 #	1.050 Q3			
Nickel (diss.filt)	<0.4 µg/l	TM152	<0.4	0.436			
Phosphorus (diss.filt)	<10 µg/l	TM152	16.2 #	15.5			
Selenium (diss.filt)	<1 µg/l	TM152	€F**	<1			
Thallium (diss.filt)	<2 µg/l	TM152	<2 #	<2			
Zinc (diss.filt)	<1 µg/l	TM152	4.61 #	4.88			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	8.52	8.43			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	3.86	3.86			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.962 #	1.06			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	14.8	15.3			
Iron (Dis.Filt)	<0.019 mg/l	TM152	<0.019 #	<0.019 #			
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100	<100			
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05			
Chloride	<2 mg/l	TM184	13.4	13.4			
Sulphate (soluble) as S	<1 mg/l	TM184	2.27 #	2.3			
PCB congener 28	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 52	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015			



Results Legend		Customer Sample Ref.	SW1	SW2		T	
# ISO17025 accredited. M mCERTS accredited.		oustomer oumple iten	SWI	5W2			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
* Subcontracted - refer to subcontractor report f accreditation status.	for	Sample Type Date Sampled	Surface Water (SW) 30/06/2020	Surface Water (SW) 30/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individ	lual	Sample Time Date Received	01/07/2020	01/07/2020			
compounds within samples aren't corrected fo recovery  (F) Trigger breach confirmed	r the	SDG Ref Lab Sample No.(s)	200701-66 22402719	200701-66 22402728			
1-3+§@ Sample deviation (see appendix)	I OD/II-it-	AGS Reference					
PCB congener 118	<b>LOD/Units</b> <0.015 μg/l	Method TM197	<0.015	<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015			
			2217				
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105			
Ovenide Tetal	<0.05 ma/l	TM227	<0.05	<0.05			
Cyanide, Total	<0.05 mg/l	I IVIZZ1	<0.05	<0.05			
рН	<1 pH Units	TM256	7.56	7.44			
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01			
muain	₹0.01 μg/г	11010-40	<b>10.01</b>	<b>40.01</b>			
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01			
gamma riori (Emaane)	10.01 µg/1	1101040	10.01		1150.		
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	Oils, and other rise.		
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01	यात्र व्याप		
7.44	0.0 . p.g			<0.01 (0.01	of for the		
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	200		
Isodrin	<0.01 µg/l	TM343	<0.01	·<601 - Te			
	5.5.1 p.g.:			ectionie			
delta-HCH	<0.01 µg/l	TM343	<0.01	inspired.01			
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	oR <0.01			
· · ·			۷ ک	Ĭ			
o,p'-DDE	<0.01 µg/l	TM343	<0.01 ent	<0.01			
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01			
	.0.04 //	T140.40	.0.04	.0.04			
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01			
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01			
ρ,ρ -υυε	<0.01 μg/i	1101343	<b>\0.01</b>	<0.01			
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01		1	
Endrin	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDT	<0.01 µg/l	TM343	<0.01	<0.02			
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	_		
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343	<0.02	<0.03			
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02	<0.02			
		T110/0	2.22	2.22			
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02	<0.03			
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.02	<0.02			
D # : 1	.0.04 "	T110/0	2.24	224			
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01			



Results Legend	C	Customer Sample Ref.	SW1	SW2		1	
# ISO17025 accredited. M mCERTS accredited.		, , , , , , , , , , , , , , , , , , , ,	SWI	3442			
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
Subcontracted - refer to subcontractor report f accreditation status.      % recovery of the surrogate standard to check		Date Sampled Sample Time	30/06/2020	30/06/2020			
efficiency of the method. The results of individ compounds within samples aren't corrected fo	lual	Date Received SDG Ref	01/07/2020 200701-66	01/07/2020 200701-66			
recovery (F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22402719	22402728			
Component 1,3,5-Trichlorobenzene	LOD/Units <0.01 µg/l	Method TM344	<0.01	<0.01			
1,0,0 111011010001120110		TIVIOTT	-0.01	10.01			
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01			
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01			
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01			
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	1150.		
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	offst and other use.		
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01	only and		
Triallate	<0.01 µg/l	TM344	<0.01	<0.01 post	200		
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01 000 000 000 000 000 000 000 000 000			
Simazine	<0.01 µg/l	TM344		100			
Disulfoton	<0.01 µg/l	TM344	Ç \	<0.01			
Propetamphos	<0.01 µg/l	TM344	<0.01 spit	<0.01			
Chlorpyriphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01			
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01			
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorpyriphos	<0.01 µg/l	TM344	<0.01	<0.01			
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Malathion	<0.01 µg/l	TM344	<0.01	<0.01			
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01			
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01			
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01			
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01			
Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01			
Ethion	<0.01 µg/l	TM344	<0.01	<0.01			
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01			



Second Companies		Results Legend		Customer Sample Bef	944	oue.		1	
Control   Cont	M	ISO17025 accredited. mCERTS accredited.		Customer Sample Ref.	SW1	SW2			
December   Company   Com	diss.filt	Dissolved / filtered sample.							
Control   Cont	* :	Subcontracted - refer to subcontractor report fo accreditation status.		Date Sampled		30/06/2020			
		efficiency of the method. The results of individu compounds within samples aren't corrected for	ual	Date Received		01/07/2020			
Commence   Color   C	(F) ·	Trigger breach confirmed		Lab Sample No.(s)					
Processore	Compon	ent		s Method	.0.04	-0.04			
Animphos motival	Triazopno	os	<0.01 µg	/I IM344	<0.01	<0.01			
Activities offish   Activities offish   Activities of   Activi	Phosalon	ie	<0.01 µg	/I TM344	<0.02	<0.02			
Pertate/rockerzene	Azinphos	methyl	<0.02 µg	/I TM344	<0.04	<0.04			
Perspective	Azinphos	ethyl							
Properties	Etridiazol	е							
Contraceme (PCNB)	Pentachlo	orobenzene	<0.01 µg		<0.01	<0.01			
Combination									
Proposition					<0.01				
Propose	Omethoa	te	<0.01 µg	/I TM345	<0.01	<0.01			
Propagamide	Propazin	e					use.		
Abacher   Abol   19   176.45   Abol	Propyzan	nide	<0.01 µg	/I TM345	<0.01		other		
Prometryn   <0.01 μg/l   TMS45   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0	Alachlor		<0.01 µg	/I TM345	<0.01	<0.01	All, all,		
Chlorothalonia	Prometry	n	<0.01 µg	/I TM345	<0.01	<0.01 POS	20		
Chlorothalonia	Telodrin		<0.01 µg	/I TM345		ecitorilet ic			
Chlorothalonia	Terbutryr	1	<0.01 µg	/I TM345	<0.01	K * 1288			
Melazachor   <0.01 µg/l   1M45   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.	Chlorotha	alonil	<0.01 µg	/I TM345	<0.02	<b>₹</b> <0.02			
Melazachor   <0.01 µg/l   1M45   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.01   <0.	Etrimpho	s	<0.01 µg	/I TM345	<0.01 ent	<0.01			
Trietazine   <0.01 μg/l   TM345   <0.01   <0.01	Metazach	nlor	<0.01 µg	/I TM345	<0.01	<0.01			
Coumaphos         <0.01 μg/l	Cyanazin	e	<0.01 µg	/I TM345	<0.01	<0.01			
Phosphamidon I         <0.01 μg/l	Trietazine	Э	<0.01 µg	/I TM345	<0.01	<0.01			
Phosphamidon II         <0.01 μg/l	Coumaph	108	<0.01 µg	/I TM345	<0.01	<0.01			
Dinitro-o-cresol   <0.1 µg/l   TM411   <0.2   <0.1	Phosphai	midon I	<0.01 µg	/I TM345	<0.01	<0.01			
Clopyralid	Phosphai	midon II	<0.01 µg	/I TM345	<0.01	<0.01			
MCPA       <0.05 μg/l	Dinitro-o-	cresol	<0.1 µg/	TM411	<0.2	<0.1			
Mecoprop       <0.04 μg/l		d	<0.04 µg		<0.08				
Dicamba       <0.04 μg/l	MCPA		<0.05 µg	/I TM411	<0.1	<0.05			
MCPB < <0.05 μg/l TM411 < 0.1 < 0.05	Mecoprop	p	<0.04 µg	/I TM411	<0.08	<0.04			
2,4-DB       <0.1 μg/l	Dicamba		<0.04 µg	/I TM411	<0.08	<0.04			
2,3,6-Trichlorobenzoic acid <0.05 μg/l TM411 <0.1 <0.05  Dichlorprop <0.1 μg/l TM411 <0.2 <0.1	МСРВ		<0.05 µg	/I TM411	<0.1	<0.05			
Dichlorprop   <0.1 μg/l   TM411   <0.2   <0.1	2,4-DB		<0.1 µg/	/I TM411	<0.2	<0.1			
	2,3,6-Tric	chlorobenzoic acid	<0.05 µg	/I TM411	<0.1	<0.05			
	Dichlorpr	ор	<0.1 µg/	/I TM411	<0.2	<0.1			
Triclopyr <0.05 μg/l TM411 <0.75 <0.75	Triclopyr		<0.05 µg	/I TM411	<0.75	<0.75			



ALS

Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited.  aq Aqueous / settled sample.		Depth (m)	0.00 0.00	0.00 0.00			
diss.filt Dissolved / filtered sample.  tot.unfilt Total / unfiltered sample.  * Subcontracted - refer to subcontractor report	t	Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
accreditation status.		Date Sampled Sample Time	30/06/2020	30/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of individed compounds within samples aren't corrected for the surrogate standard to compound the surrogate standard to check the surrogate standard the surr	dual	Date Received	01/07/2020	01/07/2020			
recovery (F) Trigger breach confirmed	0.1.110	SDG Ref Lab Sample No.(s)	200701-66 22402719	200701-66 22402728			
1-3+§@ Sample deviation (see appendix)	1.00///	Lab Sample No.(s) AGS Reference					
Component Fenoprop (Silvex)	LOD/Units <0.1 µg/l		<0.2	<0.1			
	1 7 7		· ·				
2,4-Dichlorophenoxyacetic acid	<0.05 µg/	/I TM411	<0.1	<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/		<0.1	<0.05			
Bromoxynil	<0.04 µg/		<0.08	<0.04			
Benazolin	<0.04 µg/		<0.08	<0.04			
loxynil	<0.05 µg/		<0.1	<0.05			
Pentachlorophenol	<0.04 µg/		<0.08	<0.04			
Fluoroxypyr	<0.1 µg/l	TM411	<0.2	<0.1			
					use.		
					offer and other use.		
				وچ	only air,		
				Outpos	e		
				ection et l'			
			Q.	instection purposes			
			8	os,			
			consent of				
05:05:24 40/07/2020				<del>-</del>		•	

ALS

 SDG:
 200701-66
 Client Reference:
 P20-015
 Report Number:
 558449

 Location:
 Oldcourt Landfill
 Order Number:
 Z2085
 Superseded Report:

Location: Oldcourt Landfill Order Number: Z2085 Supersed

# ISO17025 ac	Results Legend		Customer Sample Ref.	SW1	SW2			
M mCERTS ac	credited.							
diss.filt Dissolved / f	ettled sample. filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00			
tot.unfilt Total / unfilte * Subcontract	tered sample. ted - refer to subcontractor report fo	or	Sample Type	Surface Water (SW)	Surface Water (SW)			
accreditation			Date Sampled Sample Time	30/06/2020	30/06/2020			
efficiency of	f the method. The results of individu	ual	Date Received	01/07/2020	01/07/2020			
recovery	within samples aren't corrected for	rthe	SDG Ref	200701-66	200701-66			
	ach confirmed iation (see appendix)		Lab Sample No.(s) AGS Reference	22402719	22402728			
Component		LOD/Unit						
1,2,4-Trichlorobe	enzene (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
1,2-Dichlorobenz	zene (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
1,3-Dichlorobenz	zene (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
1,4-Dichlorobenz	zene (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,4,5-Trichloroph	nenol (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,4,6-Trichloroph	nenol (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,4-Dichloropher	nol (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,4-Dimethylphe	nol (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,4-Dinitrotoluen	ne (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
2,6-Dinitrotoluen	ne (aq)	<1 µg/l	TM176	<1	<1			
				#	#	ر م		
2-Chloronaphtha	alene (aq)	<1 µg/l	TM176	<1	<1	otherus		
				#	#	othe		
2-Chlorophenol (	(aq)	<1 µg/l	TM176	<1	<1	विधितं विष्		
				#	#.	official of		
2-Methylnaphtha	alene (aq)	<1 µg/l	TM176	<1	<1 05¢	97		
, ,	` "			#	alt Put	~		
2-Methylphenol (	(ag)	<1 µg/l	TM176	<1	citos pur reus			
''	· "			#	citornet #			
2-Nitroaniline (ad	g)	<1 µg/l	TM176	<1	inspectati #			
`	"			#,	Killight #			
2-Nitrophenol (ad	q)	<1 µg/l	TM176	<1	07 <sup>3</sup> / <sup>7</sup> <1			
	"			Xt.	# #			
3-Nitroaniline (ad	q)	<1 µg/l	TM176	<1 chi	<1			
`	"			rser #	#			
4-Bromophenylp	henylether (aq)	<1 µg/l	TM176	€P,	<1			
				#	#			
4-Chloro-3-meth	vlphenol (ag)	<1 µg/l	TM176	<1	<1			
	<b>7</b>   ()/	1.2		#	#			
4-Chloroaniline (	(ag)	<1 µg/l	TM176	<1	<1			
,	(- 1)	1.2						
4-Chlorophenylp	henylether (ag)	<1 µg/l	TM176	<1	<1			
	, (1)	1.3		#	#			
4-Methylphenol (	(aq)	<1 µg/l	TM176	<1	<1			
]	. "	1.3		#	#			
4-Nitroaniline (ad	q)	<1 µg/l	TM176	<1	<1			
	<u> </u>			#	#		 	
4-Nitrophenol (ad	q)	<1 µg/l	TM176	<1	<1			
· · · ·	<u> </u>							l
Azobenzene (aq	)	<1 µg/l	TM176	<1	<1			
				#	#			
Acenaphthylene	(aq)	<1 µg/l	TM176	<1	<1			
				#	#			
Acenaphthene (a	aq)	<1 µg/l	TM176	<1	<1			
`				#	#		 	
Anthracene (aq)		<1 µg/l	TM176	<1	<1			
				#	#		 	
bis(2-Chloroethy	/l)ether (aq)	<1 µg/l	TM176	<1	<1			
				#	#			l
bis(2-Chloroetho	xy)methane	<1 µg/l	TM176	<1	<1			
(aq)				#	#			
bis(2-Ethylhexyl)	) phthalate (aq)	<2 µg/l	TM176	<2	<2			
	. "			#	#			
Butylbenzyl phth	alate (aq)	<1 µg/l	TM176	<1	<1			
	· <del>"</del>			#	#			l
Benzo(a)anthrac	cene (aq)	<1 µg/l	TM176	<1	<1			
				#	#			
						-		

200701-66 Oldcourt Landfill P20-015 Z2085 Report Number: Superseded Report: SDG: Client Reference: 558449 Location: Order Number:

Comment	SVOC MS (W) - Aqueous	;						
Description for the color of			Customer Sample Ref.	SW1	SW2			
Description   Part	M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report fi	or	Sample Type	Surface Water (SW)	Surface Water (SW)			
Secretarian	** % recovery of the surrogate standard to check		Sample Time					
Component	compounds within samples aren't corrected for recovery		SDG Ref	200701-66	200701-66			
Benzolly/Bucanthene (a)	1-3+§@ Sample deviation (see appendix)		AGS Reference	22402719	22402726			
Benzo(s) (Normathene (as)				<1	<i>c</i> 1			
Barco(p) pyrone (a)	Benzo(b)ndoranarene (aq)	T Pg/I	110170					
Barcolg An Descriptions (ext)   Carbazole (ext	Benzo(k)fluoranthene (aq)	<1 µg/l	TM176					
Contracto (aq)	Benzo(a)pyrene (aq)	<1 µg/l	TM176					
Chrystene (aq)	Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176					
Dibenzoluran (eq)	Carbazole (aq)	<1 µg/l	TM176					
### ### ##############################	Chrysene (aq)	<1 µg/l	TM176					
n-Dibutyl phthalate (aq)	Dibenzofuran (aq)	<1 µg/l	TM176	<1	<1			
Detryl phthalate (aq)	n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1				
Dimethyliphthalate (aq)	Diethyl phthalate (aq)	<1 µg/l	TM176	<1	<1			
Dimethyl phthalate (aq)	Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176			1150.		
Fluoranthene (aq)   <1 \( \text{ug/l} \)   TM176   <5 \( \text{#} \)   <5 \( #	Dimethyl phthalate (aq)	<1 µg/l	TM176	<1	<1 #	other		
Fluorene (aq)	n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	only air.		
Hexachlorobutadiene (aq)	Fluoranthene (aq)	<1 µg/l	TM176		<1 05.	20		
Hexachlorobutadiene (aq)	Fluorene (aq)	<1 µg/l	TM176	<1	citor net			
Pentachiorophenol (aq)	Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 _#	Kittight \			
Pentachlorophenol (aq)	Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1 SH	0, 1			
Phenol (aq)	Pentachlorophenol (aq)	<1 µg/l	TM176	<1 cht	<1			
Hexachloroethane (aq)	Phenol (aq)	<1 µg/l	TM176	व	<1			
	n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176					
H	Hexachloroethane (aq)	<1 µg/l	TM176					
Hexachlorocyclopentadiene (aq)   1 µg/l   TM176   1   41   #   #	Nitrobenzene (aq)	<1 µg/l	TM176					
Hexachlorocyclopentadiene (aq)   <1 μg/l   TM176   <1   <1   <1     Phenanthrene (aq)   <1 μg/l   TM176   <1   <1     Indeno(1,2,3-cd)pyrene (aq)   <1 μg/l   TM176   <1   <1     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # # #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1   <1     # #   #     Pyrene (aq)   <1 μg/l   TM176   <1     # # #   #     Pyrene (aq)   <1 μg/l   TM176   <1     # # #   #     # # #   #     # # #   #	Naphthalene (aq)	<1 µg/l	TM176	<1	<1			
Phenanthrene (aq) <1 μg/l TM176 <1			TM176					
Indeno(1,2,3-cd)pyrene (aq)		<1 µg/l	TM176	<1				
Pyrene (aq)         <1 μg/l		<1 µg/l						
	Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1	<1			
	Pyrene (aq)	<1 µg/l	TM176					

VOC MS (W)

(	ALSI	Location.	Olucourt Lanuilli	Order Number.	22003	Ouperseded Report.	
		Location:	Oldcourt Landfill	Order Number:	Z2085	Superseded Report:	
		SDG:	200701-00	Chent Reference:	P20-015	Report Number:	556449

VOC	MS (W)  Results Legend		Customer Sample Ref.	0111	0.00	1	1	
# M aq diss.filt tot.unfilt * * **  (F) 1-3+§@	ISO/1025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report fi accreditation status. % recovery of the surrogate standard to check efficiency of the method. The results of individe compounds within samples aren't corrected fo recovery Trigger breach confirmed Sample deviation (see appendix)	ior : the uual	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	SW1  0.00 - 0.00 Surface Water (SW) 30/06/2020 01/07/2020 200701-66 22402719	SW2 0.00 - 0.00 Surface Water (SW) 30/06/2020 01/07/2020 200701-66 22402728			
4	ofluoromethane**	%	TM208	110	111			
Toluene	e-d8**	%	TM208	101	99.8			
4-Brom	ofluorobenzene**	%	TM208	97.6	96.6			
Dichlorodifluoromethane <1		<1 µg/l	TM208	<1 #	<1 #			
Chloror	nethane	<1 µg/l	TM208	<1 #	<1 #			
Vinyl ch	nloride	<1 µg/l	TM208	<1 #	<1 #			
Bromor	nethane	<1 µg/l	TM208	<1 #	<1 #			
Chloroe	ethane	<1 µg/l	TM208	<1 #	<1 #			
Trichlor	rofluoromethane	<1 µg/l	TM208	<1 #	<1 #			
1,1-Dicl	hloroethene	<1 µg/l	TM208	<1 #	<1 #	٠. چې.		
Carbon	disulphide	<1 µg/l	TM208	<1 #	<1 #	otter 156.		
Dichlore	omethane	<3 µg/l	TM208	<3 #	<3 #	ज्यात्र, याज		
Methyl (MTBE)	tertiary butyl ether	<1 µg/l	TM208	<1 #	<1 ,70%	edic		
trans-1,	2-Dichloroethene	<1 µg/l	TM208	<1 #	ion serie "			
1,1-Dicl	hloroethane	<1 µg/l	TM208	<1 #,	ting the at			
cis-1,2-	Dichloroethene	<1 µg/l	TM208	<1	00 <sup>1/2</sup> <1 #			
2,2-Dicl	hloropropane	<1 µg/l	TM208	<1 sent of	<1			
Bromod	chloromethane	<1 µg/l	TM208	€F**	<1 #			
Chlorof	orm	<1 µg/l	TM208	<1 #	<1 #			
1,1,1-Tı	richloroethane	<1 µg/l	TM208	<1 #	<1 #			
1,1-Dicl	hloropropene	<1 µg/l	TM208	<1 #	<1 #			
Carbon	tetrachloride	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dicl	hloroethane	<1 µg/l	TM208	<1 #	<1 #			
Benzen	е	<1 µg/l	TM208	<1 #	<1 #			
Trichlor	roethene	<1 µg/l	TM208	<1 #	<1 #			
1,2-Dicl	hloropropane	<1 µg/l	TM208	<1 #	<1 #			
Dibromomethane		<1 µg/l	TM208	<1 #	<1 #			
Bromoo	dichloromethane	<1 µg/l	TM208	<1 #	<1 #			
cis-1,3-Dichloropropene <1 μg/l		TM208	<1 #	<1 #				
Toluene <1 μg/l		TM208	<1 #	<1 #				
trans-1,	3-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #			
1,1,2-Trichloroethane <1 µg/l TM208		TM208	<1 #	<1 #				
1,3-Dicl	hloropropane	<1 µg/l	TM208	<1 #	<1 #			

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VOC MS (W)							
Results Legend # ISO17025 accredited.		Customer Sample Ref.	SW1	SW2			
M mCERTS accredited. aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.00 - 0.00 Surface Water (SW)	0.00 - 0.00 Surface Water (SW)			
* Subcontracted - refer to subcontractor report accreditation status.		Date Sampled Sample Time	30/06/2020	30/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of indivi- compounds within samples aren't corrected for	dual	Date Received	01/07/2020	01/07/2020			
recovery  (F) Trigger breach confirmed	or tile	SDG Ref Lab Sample No.(s)	200701-66 22402719	200701-66 22402728			
1-3+§@ Sample deviation (see appendix)		AGS Reference					
Component Tetrachloroethene	LOD/Units <1 µg/l	Method TM208	<1	<1			
Tours in the second sec	. 43	200	. #	. #			
Dibromochloromethane	<1 µg/l	TM208	<1	<1			
40.5"	4 "	T1 1000	#	#			
1,2-Dibromoethane	<1 µg/l	TM208	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208	<1	<1			
			#	#			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1			
Ethylbenzene	<1 µg/l	TM208	# <1	# <1			
241/1561126116	. 43	1111200	. #	. #			
m,p-Xylene	<1 µg/l	TM208	<1	<1			
V.I	.4 ()	T14000	#	#			
o-Xylene	<1 µg/l	TM208	<1 #	<1 #			
Styrene	<1 µg/l	TM208	<1	<1			
•			#	#			
Bromoform	<1 µg/l	TM208	<1	<1	.e.		
Isopropylhonzono	<1 ug/l	TM208	# <1	# <1	olig and alternise.		
Isopropylbenzene	<1 µg/l	TIVIZUO	<u> </u>	"#	other		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	न्तीर्थ वर्षार्थ		
			#		o for		
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1 purposition	e <sup>c</sup>		
Bromobenzene	<1 µg/l	TM208	# <1	Out teal			
5.0	. 43	1111200	. #	ection of recor			
Propylbenzene	<1 µg/l	TM208	<1	1115 ht <1			
O Oblasskalisassa	44//	TMOOO	<1	0R) <1			
2-Chlorotoluene	<1 µg/l	TM208	<b>∫</b> Ψ,	%, <1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 chieff *	<1			
·			COURSE #	#			
4-Chlorotoluene	<1 µg/l	TM208	<1	<1			
tert-Butylbenzene	<1 µg/l	TM208	# <1	* <1			
			#	#			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1			
sec-Butylbenzene	<1a/l	TM208	# <1	# <1			
sec-Butylbenzene	<1 µg/l	TIVIZUO	<u> </u>	#			
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1			
			#	#			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1			
,	, ka		#	#			
n-Butylbenzene	<1 µg/l	TM208	<1	<1 "			
1,2-Dichlorobenzene	<1 µg/l	TM208	# <1	# <1			
1,2-01011010000126116	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	I IVIZUO	<u> </u>	#			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 **	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208	# <1	# <1			
	. Ma.,	200	#	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1			
Naphthalene <1 µg/l TM208 <1		# <1					
Naphthalene <1 µg/l TM208		<1 #	<1 #				
1,2,3-Trichlorobenzene <1 μς		TM208	<1	<1			
			#	#			
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1	<1			]
					ļ		



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# **Table of Results - Appendix**

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS  Acid Herbs in Water by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbern Water by GCMS
ot applicable. Il testing (unless	subcontracted) performed at ALS Life Sciences Ltd Hawarder	(Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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# **Test Completion Dates**

	_	103
Lab Sample No(s)	22402719	22402728
Customer Sample Ref.	SW1	SW2
•		
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Туре	Surface Water	Surface Water
Acid Herbicides by GCMS	07-Jul-2020	07-Jul-2020
Ammonium Low	07-Jul-2020	07-Jul-2020
Anions by Kone (w)	02-Jul-2020	02-Jul-2020
BOD True Total	08-Jul-2020	08-Jul-2020
COD Unfiltered	05-Jul-2020	05-Jul-2020
Conductivity (at 20 deg.C)	03-Jul-2020	03-Jul-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2020	07-Jul-2020
Dissolved Metals by ICP-MS	06-Jul-2020	06-Jul-2020
Dissolved Oxygen by Probe	03-Jul-2020	03-Jul-2020
Fluoride	03-Jul-2020	03-Jul-2020
Mercury Dissolved	02-Jul-2020	02-Jul-2020
Mineral Oil C10-40 Aqueous (W)	07-Jul-2020	07-Jul-2020
PCB Congeners - Aqueous (W)	08-Jul-2020	08-Jul-2020
Pesticides (Suite I) by GCMS	08-Jul-2020	07-Jul-2020
Pesticides (Suite II) by GCMS	07-Jul-2020	07-Jul-2020
Pesticides (Suite III) by GCMS	09-Jul-2020	09-Jul-2020
pH Value	02-Jul-2020	02-Jul-2020
Phosphate by Kone (w)	02-Jul-2020	02-Jul-2020
Suspended Solids	07-Jul-2020	07-Jul-2020
SVOC MS (W) - Aqueous	03-Jul-2020	05-Jul-2020
VOC MS (W)	06-Jul-2020	06-Jul-2020

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Appendix

# General

Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

- 2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed
- 3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised
- 5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate
- 6. NDP No determination possible due to insufficient/unsuitable sample.
- 7. Results relate only to the items tested.
- 8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected
- 9. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.
- 10. Stones/debris are not routinely removed. We always endeavour to For representative sub sample from the received sample.
- representative sub sample from the received sample.

  11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised. OTI
- 12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.
- 14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
- 15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
- 16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample

17. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

#### 18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised

1	Container with Headspace provided for volatiles analysis				
2	Incorrect container received				
3	Deviation from method				
§	Sampled on date not provided				
•	Sample holding time exceeded in laboratory				
@	Sample holding time exceeded due to late arrival of instructions or samples				

#### 19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres wing ALS (Hawarden) in-house method of transmitted/polarised light microscopy and

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of selections.

ALS (Hawarden) in house 1000 and 1000 are 1000 and 1000 and 1000 are 1000 and 1000 an stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name		
Chrysof le	White Asbestos		
Amosite	Brow nAsbests		
Cro d dolite	Blue Asbe stos		
Fibrous Act nolite	-		
Fib to us Anthop hyll ite	-		
Fibrous Tremolite	-		

### Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

### Respirable Fibres

Respirable fibres are defined as fibres of <3  $\mu m$  diameter, longer than 5  $\mu m$  and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung

Standing Committee of Analysts, The Quantification of Asbestos in Soil (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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