



Newport City Council
Civic Centre
Newport
NP20 4UR

Attention: Meirion Humphreys

CERTIFICATE OF ANALYSIS

Date: 04 April 2016
Customer: H_NCC_NPT
Sample Delivery Group (SDG): 160324-67
Your Reference: Bi-Annual (March)
Location: Docksway
Report No: 355608

We received 5 samples on Thursday March 24, 2016 and 5 of these samples were scheduled for analysis which was completed on Monday April 04, 2016. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan
Operations Manager





SDG: 160324-67
Job: H_NCC_NPT-7
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Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13150838	C2B		0.00 - 0.00	23/03/2016
13150849	LF08_07		0.00 - 0.00	23/03/2016
13150829	SW_23		0.00 - 0.00	23/03/2016
13150834	SW_24		0.00 - 0.00	23/03/2016
13150862	SW_1A		0.00 - 0.00	23/03/2016

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



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Results Legend		Customer Sample R	C2B	LF08_07	SW_23	SW_24	SW_1A
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		23/03/2016	23/03/2016	23/03/2016	23/03/2016	23/03/2016
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Ionic balance	% Diff	Calulation	-2.65	-2.77			
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043	10700	3150			
BOD, unfiltered	<1 mg/l	TM045	264	275	3.79	2.65	<1
			#	#	#	#	#
Organic Carbon, Total	<3 mg/l	TM090	1290	238			
			◆#	◆#			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1980	329	19.3	<0.2	<0.2
			#	#	#	#	#
Sulphide	<0.01 mg/l	TM101	6.38	1.89			
			#	#			
COD, unfiltered	<7 mg/l	TM107	4190	716	29.3	19.7	<7
			#	#	#	#	#
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	21.6	5.92	1.41	0.584	0.432
			#	#	#	#	#
Arsenic (diss.filt)	<0.12 µg/l	TM152	111	46.3			
			#	#			
Boron (diss.filt)	<9.4 µg/l	TM152	20700	3730			
			#	#			
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.355	0.122			
			#	#			
Chromium (diss.filt)	<0.22 µg/l	TM152	572	51			
			#	#			
Copper (diss.filt)	<0.85 µg/l	TM152	6.73	4.28			
			#	#			
Lead (diss.filt)	<0.02 µg/l	TM152	9.07	4.26			
			#	#			
Manganese (diss.filt)	<0.04 µg/l	TM152	666	3290			
			#	#			
Nickel (diss.filt)	<0.15 µg/l	TM152	254	46.8			
			#	#			
Selenium (diss.filt)	<0.39 µg/l	TM152	31.2	31.7			
			#	#			
Zinc (diss.filt)	<0.41 µg/l	TM152	132	129			
			#	#			
EPH Range >C10 - C40 (aq)	<46 µg/l	TM172	6710	1210			
			#	#			
Nitrite as NO2	<0.05 mg/l	TM184	<1	<0.05			
			#	#			
Sulphate	<2 mg/l	TM184	<40	<20			
			#	#			
Chloride	<2 mg/l	TM184	2860	736	157	38.4	15.8
			#	#	#	#	#
Phosphate (ortho) as PO4	<0.05 mg/l	TM184	66.3	6.29			
			#	#			
Nitrate as NO3	<0.3 mg/l	TM184	<6	<3			
			#	#			
Phosphate (ortho) as P	<0.02 mg/l	TM184	21.6	2.05			
			#	#			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<2	<1			
			#	#			
Cyanide, Total	<0.05 mg/l	TM227	0.06	<0.05			
			#	#			
Potassium (diss.filt)	<1 mg/l	TM228	1030	251			
			#	#			
Iron (diss.filt)	<0.019 mg/l	TM228	1.71	2.21			
			#	#			
Hardness, Total as CaCO3	<1 mg/l	TM228	887	1300			
			#	#			
pH	<1 pH Units	TM256	7.99	7.5	7.58	8.26	8.42
			#	#	#	#	#



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Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
Calculation				
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
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		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples 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		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
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		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
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		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



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Test Completion Dates

Lab Sample No(s)	13150838	13150849	13150829	13150834	13150862
Customer Sample Ref.	C2B	LF08_07	SW_23	SW_24	SW_1A
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Alkalinity Filtered as CaCO3	02-Apr-2016	02-Apr-2016			
Ammoniacal Nitrogen	29-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016
Anions by Kone (w)	01-Apr-2016	01-Apr-2016	01-Apr-2016	01-Apr-2016	01-Apr-2016
BOD True Total	29-Mar-2016	29-Mar-2016	29-Mar-2016	29-Mar-2016	29-Mar-2016
COD Unfiltered	27-Mar-2016	27-Mar-2016	27-Mar-2016	27-Mar-2016	27-Mar-2016
Conductivity (at 20 deg.C)	30-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016
Cyanide Comp/Free/Total/Thiocyanate	30-Mar-2016	31-Mar-2016			
Dissolved Metals by ICP-MS	04-Apr-2016	31-Mar-2016			
EPH (DRO) (C10-C40) Aqueous (W)	31-Mar-2016	31-Mar-2016			
Ionic Balance	02-Apr-2016	02-Apr-2016			
Metals by iCap-OES Dissolved (W)	31-Mar-2016	31-Mar-2016			
Nitrite by Kone (w)	30-Mar-2016	30-Mar-2016			
pH Value	30-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016	30-Mar-2016
Sulphide	31-Mar-2016	31-Mar-2016			
Total Organic and Inorganic Carbon	31-Mar-2016	04-Apr-2016			
VOC MS (W)	31-Mar-2016	31-Mar-2016			



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Appendix

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. 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. ALcontrol Laboratories 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 receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved 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%, they are generally wider for volatiles analysis, 50-150%. 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).

17. 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.

General

20. 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.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

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

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation 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 ALcontrol Laboratories (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 ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Crystalline	White Asbestos
Amphibole	Brown Asbestos
Crystalline	Blue Asbestos
Fibrous Asbestos	-
Fibrous Amphibole	-
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.