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Analytical Report Number : 20-28703

Project / Site name:	Biddulph Moor	**Samples received on:**	07/09/2020
Your job number:	GML19145	**Samples instructed on/ Analysis started on:**	07/09/2020
Your order number:	ML GML19145 002	**Analysis completed by:**	14/09/2020
Report Issue Number:	1	**Report issued on:**	14/09/2020
Samples Analysed:	2 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 20-28703
Project / Site name: Biddulph Moor
Your Order No: ML GML19145 002

Lab Sample Number				1613739	1613740
Sample Reference				TP1	TP2
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				07/09/2020	07/09/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	15
Total mass of sample received	kg	0.001	NONE	0.5	0.5
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	8.4	7.8
Total Sulphate as SO4	mg/kg	50	MCERTS	370	560
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.037	0.013
Total Organic Carbon (TOC)	%	0.1	MCERTS	1	3.3
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.21
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.13
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.12
Phenanthrene	mg/kg	0.05	MCERTS	1.3	1.2
Anthracene	mg/kg	0.05	MCERTS	0.3	0.23
Fluoranthene	mg/kg	0.05	MCERTS	2.9	3.3
Pyrene	mg/kg	0.05	MCERTS	2.7	3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.4	1.6
Chrysene	mg/kg	0.05	MCERTS	1	1.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	3.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.78	2.8
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.61	0.98
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.24
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59	0.95
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	13.9	21
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.5	9.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	110
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	73
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	670
Monoaromatics & Oxygenates					
Benzene	µg/kg	1	MCERTS	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0

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Analytical Report Number: 20-28703
Project / Site name: Biddulph Moor
Your Order No: ML GML19145 002

Lab Sample Number				1613739	1613740
Sample Reference				TP1	TP2
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				07/09/2020	07/09/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	27
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	33
VOCs					
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-
Chloroethane	µg/kg	1	NONE	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-
Benzene	µg/kg	1	MCERTS	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-

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Analytical Report Number: 20-28703
Project / Site name: Biddulph Moor
Your Order No: ML GML19145 002

Lab Sample Number				1613739	1613740
Sample Reference				TP1	TP2
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				07/09/2020	07/09/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-
Styrene	µg/kg	1	MCERTS	< 1.0	-
Tribromomethane	µg/kg	1	NONE	< 1.0	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-

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Analytical Report Number: 20-28703
Project / Site name: Biddulph Moor
Your Order No: ML GML19145 002

Lab Sample Number				1613739	1613740
Sample Reference				TP1	TP2
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				07/09/2020	07/09/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	1.3	-
Anthracene	mg/kg	0.05	MCERTS	0.3	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-
Fluoranthene	mg/kg	0.05	MCERTS	2.9	-
Pyrene	mg/kg	0.05	MCERTS	2.7	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.4	-
Chrysene	mg/kg	0.05	MCERTS	1	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.78	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.61	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Project / Site name: Biddulph Moor

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1613739	TP1	None Supplied	0.3	Brown loam and clay with gravel and vegetation.
1613740	TP2	None Supplied	0.3	Brown loam and clay with gravel and vegetation.

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Analytical Report Number : 20-28703
Project / Site name: Biddulph Moor

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample Deviation Report

Analytical Report Number : 20-28703
Project / Site name: Biddulph Moor

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP1	None Supplied	S	1613739	b	Volatile organic compounds in soil	L073B-PL	b
TP2	None Supplied	S	1613740	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP2	None Supplied	S	1613740	b	TPHCWG (Soil)	L088/76-PL	b

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature