Our ref: ML/GML19145/LR1

Date: 23rd Sept 2020

Mr & Mrs J Chaney
Former Provender Mill
Under the Hill
Biddulph Moor

F.A.O Mr J Chaney

Limited Soil Sampling Former Provender Mill, Biddulph Moor

Dear John,

Following discussions with the Local Authority Environmental Health Dept; Geo-Matters Limited we made aware that there were outstanding concerns to the planning application as outlined below:

- Location of a former above ground tank located adjacent but off site to the east;
- A former inspection pit (corridor), the entrance of which was located on the lower ground floor under the mill entrance; and
- Concerns that there had not been any testing of imported soils to the proposed new build.

The general photo's plan; appended but also submitted within the Phase I Desktop Study; clearly show the locations of both the off-site tank and inspection pit (corridor).

Geo-Matters explained to the Local Authority Environmental Health Dept the following; in order to; address their concerns:

- The above ground tank was adjacent but off site and had been removed as part of the demolition of the former mill along with a scrape of soils from beneath the tank location and removed by an authorised waste contractor with soil results submitted;
- The inspection pit (corridor) had also been removed as part of the demotion works along with a scrape of soils from beneath the location and removed by an authorised waste contractor with soil results submitted;
- No private soft landscaping within the boundaries of the new build and that the back yard was to be paviors laid on an existing concrete slab.

Notwithstanding the above it was with agreement with the Local Authority Environmental Health Dept that we would best address these concerns by obtaining a soil sample from the former tank location, one from as close to the former inspection pit (corridor) and finally provide an update to the conceptual site model presented within the Phase I Desktop Study.

Site Works
At the Client's request; have attended the above site to obtain samples of the near surface material were subject to chemical analysis, please find below our findings:

Sampling Regime
Soils on site were subject to laboratory chemical analysis. All samples were taken in snap top plastic containers, any samples suspected of containing any hydrocarbon or volatile compounds were placed in 250ml amber glass jars or vials. All samples were placed in cooled containers and transported to Geo-Matters Limited's storage facility in Castle Donington before awaiting transfer to a UKAS / MCERTS accredited laboratory.

The samples taken were analysed for a range of contaminants in accordance with NHBC Standards Chapter 4.1 'Land Quality – managing ground conditions', CLR 8 'Potential Contaminants for the Assessment of Land'. The soil samples were analysed for the following parameters: arsenic, cadmium, chromium, lead, mercury, copper, nickel, zinc, selenium, speciated poly-aromatic hydrocarbons (PAH), sulphate, speciated total petroleum hydrocarbons (TPH), speciated VOC/SVOC's and asbestos.

Laboratory Analysis
Representative soil samples from the exploratory locations were analysed for the range of contaminants outlined above. The environmental analysis was scheduled by Geo-Matters Limited and carried out by a UCAS Accredited Laboratory. The full details of the test results are attached and are summarised in the tables below and overleaf.

Laboratory Analysis of Soil Samples

Determinand	no. of Samples Analysed	Concentration Range (mg/kg)	Tier 1 Screening Values (mg/kg)	no. Exceeding Threshold
Metals				
Arsenic	2	6.5 – 9.5	37	0
Cadmium	2	<0.2 – 0.5	11	0
Chromium (Total)	2	13 – 17	910	0
Chromium VI	2	<4.0	6	0
Lead	2	29 – 73	200	0
Selenium	2	<1.0	250	0
Nickel	2	10 – 14	130	0
Copper	2	14 – 110	2400	0
Zinc	2	57 – 670	3700	0
Mercury	2	<0.3 - 0.5	40	0

Organics and Inorganics				
Benzo(a)pyrene	2	1.3 – 1.5	2.2	0
TPH Ali (C_{5-6})	1	<0.001	42	0
TPH Ali (C_{6-8})	1	<0.001	100	0
TPH Ali (C_{8-10})	1	<0.001	27	0
TPH Ali (C_{10-12})	1	<1.0	130	0
TPH Ali (C_{12-16})	1	<2.0	1100	0
TPH Ali (C_{16-21})	1	<8.0	65000	0
TPH Ali (C_{21-35})	1	<8.0	65000	0
TPH Aro (C_{5-7})	1	<0.001	70	0
TPH Aro (C_{7-8})	1	<0.001	130	0
TPH Aro (C_{8-10})	1	<0.001	34	0
TPH Aro (C_{10-12})	1	<1.0	74	0
TPH Aro (C_{12-16})	1	<2.0	140	0
TPH Aro (C_{16-21})	1	<10	260	0
TPH Aro (C_{21-35})	1	27	1100	0
BTEX	1	<0.001	0.087 – 130	0
pH	2	7.8 – 8.4	N/A	0
Water Sol. Sulphate (g/l)	2	0.013 – 0.037	0.500	0
VOC	1	<0.001	Various	0
SVOC	1	<0.05 – 2.9	Various	0
Phenols	2	<1.0	280	0
Asbestos	5	ND	D	0

LQM 'S4UL' values (at 1% SOM for organics) for a residential use (Copyright Land Quality Management Ltd reproduced with permission; Publication Number S4UL3676 All Rights Reserved);

Metals

The results were compared with the referenced Tier 1 Screening Values (T1SVs) which are an initial and conservative set of values which are considered most appropriate (overall) to the proposed cable location.

Zootoxic Metals

None of the samples analysed for zootoxic metals recorded concentrations in excess of the relevant T1SVs. On this basis, no risks have been identified from these determinands at the subject site.

Phytotoxic Metals

None of the samples analysed for phytotoxic metals recorded concentrations that were deemed excessive. On this basis, no risks have been identified from these determinands at the subject site.

Inorganics and Organics

In lieu of published DEFRA Category 4 Screening Levels for inorganics and organics, the results have been assessed by comparison to available alternative T1SVs including the LQM / CIEH Generic Assessment Criteria (2nd Edition).

Inorganics
The pH values recorded from the soil samples averaged 8.1, indicating that generally near neutral soil conditions prevail within soils at the site.

Asbestos
None of the samples analysed for asbestos fibres recorded concentrations in excess of the relevant T1SVs. On this basis, no risks have been identified from these determinands at the subject site.

Organics
PAHs
None of the samples analysed for PAH's recorded concentrations in excess of the relevant T1SVs. On this basis, no risks have been identified from these determinands at the subject site.

VOC/SVOC's
None of the samples analysed for VOC/SVOC's recorded concentrations in excess of the relevant T1SVs. On this basis, no risks have been identified from these determinands at the subject site.

TPH
None of the samples analysed for TPH compounds recorded concentrations in excess of the relevant T1SVs. On this basis, no risks have been identified from these determinands at the subject site.

Phase II Conceptual Model
Site Summary
The results of the scheduled chemical analysis were compared with the appropriate T1SVs based on a proposed residential end use with private gardens (conservative).

Source-Pathway-Receptor Characterisation and Risk Assessment
The results of the chemical testing analyses indicate that no determinands have been recorded at concentrations sufficient to act as a source in a SOURCE-PATHWAY-RECEPTOR scenario (i.e. significant contamination was not encountered during our recent investigation works).

The potential pathways and receptors have therefore been updated; where necessary; from those listed in the Desktop Study.

Identified Pollutant Linkages
In view of the above; the pollutant linkages have been reassessed as listed in the table overleaf.

Identified Pollutant Linkages

Potential Source	Pathway	Receptors					SPL*
		Controlled Waters	Ground workers	End-users	Flora	Building materials	
Metal / metalloids and inorganics in **SOIL**	Direct Ingestion						N/A
	Dermal Contact						N/A
	Inhalation						N/A
	Leaching/direct movement						N/A
Asbestos containing materials in **SOIL**	Inhalation						N/A
Organics in **SOIL** (hydrocarbons, VOCs, PAHs etc.)	Direct Ingestion						N/A
	Dermal Contact						N/A
	Inhalation						N/A
	Leaching/direct movement						N/A
Metal / metalloids and inorganics in **CONTROLLED WATER**	Direct Ingestion						N/A
	Dermal Contact						N/A
	Inhalation						N/A
	Leaching/direct movement						N/A
Organics in **CONTROLLED WATER** (hydrocarbons, PAHs etc.)	Direct Ingestion						N/A
	Dermal Contact						N/A
	Inhalation						N/A
	Leaching/direct movement						N/A
GROUND GAS (Carbon Dioxide and Methane) #	Direct Ingestion						N/A
	Inhalation						N/A
	Leaching/direct movement						N/A

*Subject to Local Authority / NHBC approval.

Model Status, Uncertainty and Justification
The conceptual model is considered to represent the current site conditions based on the information derived from the site investigation.

Risk Assessment

Qualitative Risk Assessment

The regulatory framework within England which addresses risks from contaminated land is presented within and across several regimes. This includes sections 78 (A) to (YC) in Part IIA of the Environmental Protection Act 1990 (which was retrospectively inserted by Section 57 of the Environment Act 1995), Building Regulations, Environmental Permitting Regulations and the National Planning Policy Framework (NPPF) 2018. The contaminated land regime (principally under Part IIA of the EPA (1990)) sets out a risk-based approach within which the identification and remediation of contaminated land presenting unacceptable risks to people and the environment is described. Related regimes (such as those listed above) provide additional guidance through frameworks which focus on specific subsequent scenarios (e.g. re-use of land for new uses).

In the context of the planning system (as identified within the NPPF), the reuse of brownfield land is endorsed (s.118 pp35) and an emphasis is placed upon remediating and mitigating contaminated land (where appropriate). The NPPF states that (s.178/179 pp51-52):

"Planning policies and decisions should also ensure that:

- *a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
- *adequate site investigation information prepared by a competent person is available to inform these assessments".*

"Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner".

And additionally, the NPPF states that (s. 180 pp52):

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".

The core legislation (Part IIA) adopts the principle of a 'suitable for use' approach for; the assessment of contaminated land, the derivation of a site-specific risk assessment and subsequent determination of a remedial strategy. Action is only required if unacceptable risks are posed to human health or to the environment, taking into account the current land-use and geo-environmental settings.

The legislation places a responsibility on the Local Authority to determine whether the land under its jurisdiction is contaminated by consideration of whether: -

- ***Significant harm is being caused;***
- ***There is a significant possibility of significant harm being caused; or***
- ***Pollution of controlled waters is being caused or is likely to be caused.***

The statutory guidance describes a risk assessment methodology in terms of 'significant pollutants' and 'pollutant linkages', using SOURCE-PATHWAY-RECEPTOR' scenarios for the site.

On the basis of the above and also upon available data, the geo-environmental setting and proposed end-use, a qualitative Source-Pathway-Receptor risk assessment is presented below:

Qualitative Risk Assessment Summary Table

Source	Pathway	Target (Receptor)	Comments	Risk Level	Action*
Metals / Metalloids in soils and dust	Direct ingestion (active) Inhalation (passive) Dermal contact.	Ground workers, End users	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Metals / Metalloids in soils and dust	Near surface soils	Plants within the proposed landscaped areas and gardens	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Metal / Metalloids compounds in waters	As above (plus skin contact)	Ground workers, Site users	Significant groundwater was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Inorganics in soils and dust	Direct ingestion (active) Inhalation (passive)	Ground workers, End-users and the Property	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Organic compounds in soils and dust	As above (plus skin contact)	Ground workers, Site Users	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Organic compounds in waters	As above (plus skin contact)	Ground workers, Site Users	Significant groundwater was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Ground Gas	Inhalation (Passive), Ingress	End-Users	Significant ground gas sources not recorded	**LOW#**	NO FURTHER ACTION REQUIRED
Asbestos	Inhalation (passive), Ingress	End Users	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED

Notes:LOW / MODERATE / HIGH - Risk level is assigned a low / moderate / high qualitative value, based on assessed requirement for action in context of Part II EPA 90; and
* Subject to Local Authority Approval.

Conclusions
The Phase II Conceptual Model and the Qualitative Risk Assessment outlined above indicate that feasible pollutant linkages have been not been identified, and therefore at this stage onsite natural soils should be treated as uncontaminated in the context of the proposed re-development of the site for a residential dwelling, subject to regulatory authority approval.

We hope that the above is sufficient for your present requirements, but should you have any further queries then please do not hesitate to contact the undersigned.

Yours sincerely
for Geo-Matters Limited.



Mark Lewis BEng(Hons) CEnv MSOE MIEnvSc FFB
Managing Director

encs



Above ground Tank

Inspection Pit (Corridor)



DO NOT SCALE

NOTES:

N

GEOMATTERS
consulting engineers

www.geo-matters.com
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CLIENT:
Mr & Mrs A Chaney

PROJECT:
Under The Hill, Biddulph Moor

TITLE:
General Photographs Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN:	DATE:
ML	Sept 2020
PROJECT No:	DRAWING No:
GML19145	001

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DO NOT SCALE

NOTES:

N

Approx Location of the Inspection Pit

Approx Location of the Above Ground Tank

GEOMATTERS consulting engineers

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CLIENT:
Mr & Mrs A Chaney

PROJECT:
Under The Hill, Biddulph Moor

TITLE:
Site Features Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN : ML	DATE: Sept 2020
PROJECT No: GML19145	DRAWING No: 002

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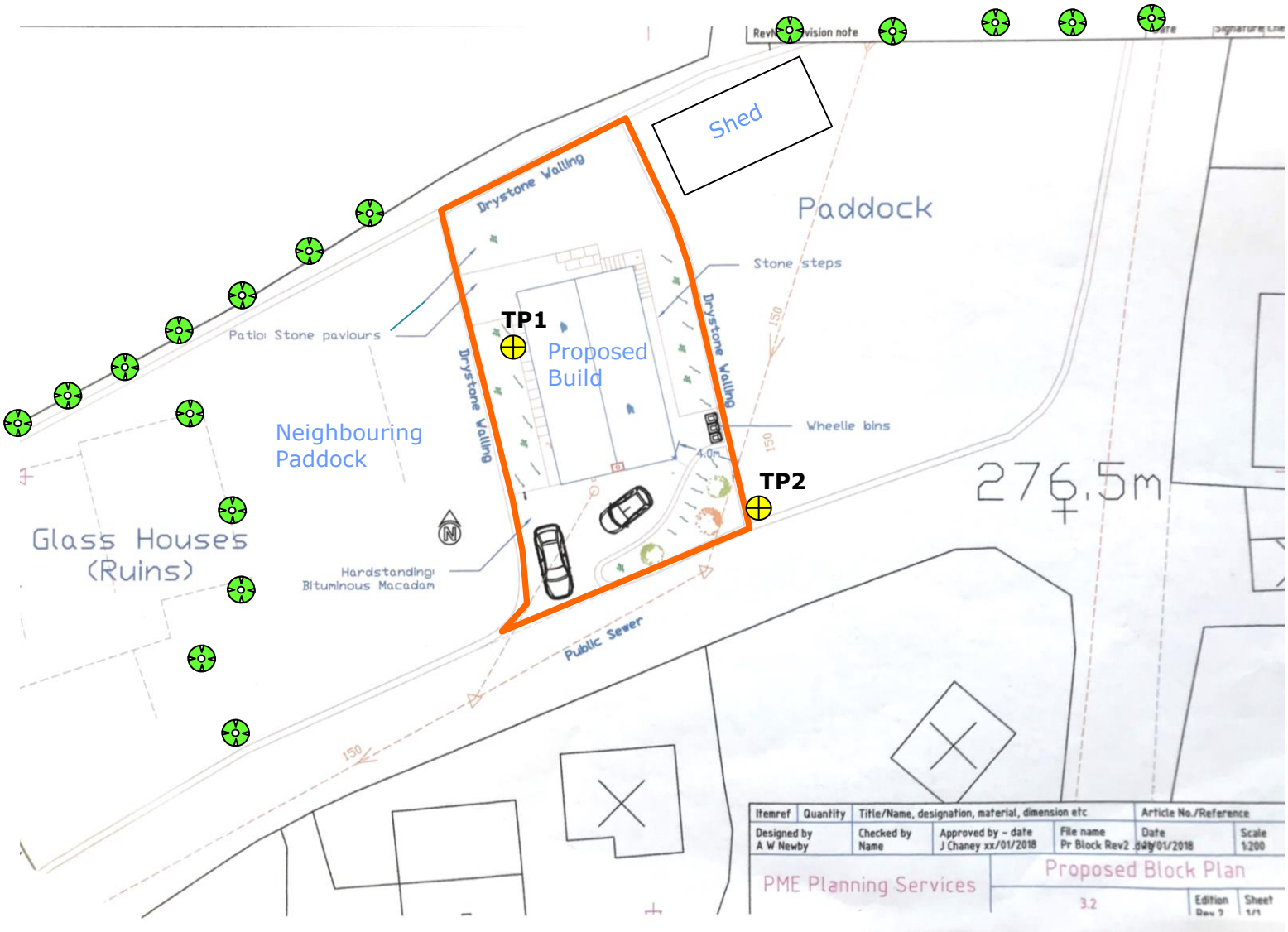

DO NOT SCALE

NOTES:

N

⊕ Approx Location of the Exploratory Location

GEOMATTERS consulting engineers

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CLIENT:
Mr & Mrs A Chaney

PROJECT:
Under The Hill, Biddulph Moor

TITLE:
Exploratory Location Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN: ML	DATE: Sept 2020
PROJECT No: GML19145	DRAWING No: 003

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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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The results included within the report relate only to the sample(s) submitted for testing.

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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Analytical Report Number : 20-28703
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