Our ref: JR/GML18246/SST-L

Date: 27th October 2020

EMAIL (SCANNED)
Luke Boekestyn
Burmor Projects Ltd
Burmor House
Sunderland Road
Northfields Industrial Estate
Market Deeping
Peterborough
PE6 8FD

For the attention of Luke Boekestyn

Dear Luke,

GML18246: Further Analysis and Sampling of Soils at the Site off Willow Walk, Spalding

Geo-Matters Ltd were recently instructed by Burmor Projects Ltd (hereafter referred to as 'the Client') to undertake further sampling and analysis works for subsoil materials at their site off Willow Walk, Spalding.

The site is currently undergoing redevelopment for a residential end use, comprising traditional housing with private gardens. The development layout is shown on Drawing 001v (enclosed).

Relevant Reports which **must** be read in conjunction with this letter are referenced below:

- Ramboll Whitbybird Ltd – Law's Yard, Spalding – Environmental Factual & Interpretive Report for Leonard Cheshire (ref. 4926, dated November 2007);
- Geo-Matters Ltd - Site off Willow Walk, Spalding - Phase I and II Geo-Environmental Investigation for Minster Property Group Ltd (ref. GML18246/1/1, dated December 2018); and
- Geo-Matters Ltd - Site off Willow Walk, Spalding – Remedial Method Statement for Burmor Construction Ltd (ref. GML18246/4/1, dated February 2019).

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Background

It is understood that the Client has been asked by South Holland DC to provide additional data in relation to the subsoil materials which are present at the site in relation to the ongoing residential redevelopment.

Engineers from Geo-Matters Ltd attended the site on 14th October 2020 and retrieved 3 No. samples of the underlying subsoil materials from the capping layer present beneath public open space (POS) and private garden areas of the site.

Chemical Test Results

The laboratory results have been reviewed against the RMS Import Values contained within the Remedial Method Statement (ref. GML18246/4/1, dated February 2019) for the site (for a proposed residential end-use). A summary of the test results is shown in Table 1 below and chemical test certificates are enclosed:

Table 1: Summary of Chemical Test Data

Determinand	No. of Samples Analysed	Concentration Range (mg/kg)	Tier 1 Screening Values[a] (mg/kg)	No. Exceeding Threshold
Arsenic	3	13.0 – 19.0	37.0	0
Cadmium	3	0.24 – 0.36	11.0	0
Chromium (Total)	3	12.0 – 19.0	910.0	0
Chromium VI	3	<0.50*	6.0	0
Lead	3	28.0 – 39.0	200.0	0
Selenium	3	0.84 – 0.96	250.0	0
Nickel	3	15.0 – 22.0	130.0	0
Copper	3	15.0 – 22.0	2400.0	0
Zinc	3	33.0 – 55.0	3700.0	0
Mercury	3	0.13 – 0.19	40.0	0
Benzo(a)pyrene	3	<0.10*	2.2	0
TPH Aliphatic EC_5-EC_6	3	<1.0*	42.0	0
TPH Aliphatic EC_6-EC_8	3	<1.0*	100.0	0
TPH Aliphatic EC_8-EC_{10}	3	<1.0*	27.0	0
TPH Aliphatic EC_{10}-EC_{12}	3	<1.0*	130.0	0
TPH Aliphatic EC_{12}-EC_{16}	3	<1.0*	1100.0	0
TPH Aliphatic EC_{16}-EC_{21}	3	<1.0*	65000.0	0
TPH Aliphatic EC_{21}-EC_{35}	3	<1.0*	65000.0	0
TPH Aromatic EC_5-EC_7	3	<1.0*	70.0	0
TPH Aromatic EC_7-EC_8	3	<1.0*	130.0	0
TPH Aromatic EC_8-EC_{10}	3	<1.0*	34.0	0
TPH Aromatic EC_{10}-EC_{12}	3	<1.0*	74.0	0
TPH Aromatic EC_{12}-EC_{16}	3	<1.0*	140.0	0
TPH Aromatic EC_{16}-EC_{21}	3	<1.0*	260.0	0
TPH Aromatic EC_{21}-EC_{35}	3	<1.0*	1100.0	0

[a] Generic screening values - LQM S4ULs at 1.0% SOM (resi. end use with plant uptake) as listed within our RMS

* Contaminants all recorded below laboratory limits of detection

The results indicate that the samples taken from the subsoil materials were all below the relevant screening criteria as presented within the site-specific RMS.

Conclusions

Based on the site visit made by Geo-Matters Ltd and the associated sampling and analysis undertaken, it is considered that the subsoil materials encountered are suitable for use within the residential redevelopment. No exceedances of the relevant screening values have been recorded and therefore no issues have been identified with the materials analysed at this time.

This letter report should be submitted by the Client to the Local Authority and the NHBC for their approval and to allow all relevant conditions to be discharged.

We hope that the attached 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 Ltd.

James Regan
Associate Director (Technical)

Encs.

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UKAS TESTING 2183

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Amended Report

Report No.:	20-28119-2		
Initial Date of Issue:	23-Oct-2020	**Date of Re-Issue:**	23-Oct-2020
Client	Geo-Matters Ltd		
Client Address:	104 Bondgate Castle Donington Derbyshire DE74 2NR		
Contact(s):	Group Email Address James Regan		
Project	GML18246 Site of Willow Walk, Spalding		
Quotation No.:	Q20-19604	**Date Received:**	19-Oct-2020
Order No.:	GML18246/JR/007X	**Date Instructed:**	19-Oct-2020
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	23-Oct-2020
Date Approved:	23-Oct-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: GML18246 Site of Willow Walk, Spalding

Client: Geo-Matters Ltd			**Chemtest Job No.:**		20-28119	20-28119	20-28119
Quotation No.: Q20-19604			**Chemtest Sample ID.:**		1082713	1082714	1082715
			Sample Location:		SUB1	SUB2	SUB3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.40	0.40
			Date Sampled:		14-Oct-2020	14-Oct-2020	14-Oct-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	32	16	17
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	None	None	None
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	7.8	7.9	8.0
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	1.1	0.81	0.99
Sulphate (Total)	M	2430	%	0.010	1.6	0.97	0.99
Arsenic	M	2450	mg/kg	1.0	19	14	13
Cadmium	M	2450	mg/kg	0.10	0.36	0.24	0.25
Chromium	M	2450	mg/kg	1.0	19	13	12
Copper	M	2450	mg/kg	0.50	22	15	15
Mercury	M	2450	mg/kg	0.10	0.19	0.13	0.15
Nickel	M	2450	mg/kg	0.50	22	15	15
Lead	M	2450	mg/kg	0.50	39	28	28
Selenium	M	2450	mg/kg	0.20	0.96	0.84	0.84
Zinc	M	2450	mg/kg	0.50	55	33	33
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	10	10	9.4
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: GML18246 Site of Willow Walk, Spalding

Client: Geo-Matters Ltd			**Chemtest Job No.:**		20-28119	20-28119	20-28119
Quotation No.: Q20-19604			**Chemtest Sample ID.:**		1082713	1082714	1082715
			Sample Location:		SUB1	SUB2	SUB3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.40	0.40
			Date Sampled:		14-Oct-2020	14-Oct-2020	14-Oct-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com