

Mr John Coles Bury Hill Landscape Supplies Ltd The Estate Office Old Bury Hill Westcott Nr Dorking Surrey, RH4 3JU

> 22nd February 2024 Our Ref: TOHA/24/1263/1/SS Your Ref: see below

Dear Sirs

Sand Analysis Report: Bury Hill Horsham Yard – Kent Medium Contract Sand

We have completed the analysis of the sand sample recently submitted, referenced *Kent Medium Contract Sand*, and have pleasure reporting our findings.

The purpose of the analysis was to assess selected physical and chemical properties of the sand in order to determine its potential for use in a range of landscape applications. The ultimate suitability of the sand for any specific use or project should be reviewed and assessed in advance. However, this report offers some possible applications where the sand may be appropriate.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the sand source. The report and results should therefore not relied upon by any third parties.

SAMPLE EXAMINATION

The sample can be described as a yellowish brown (Munsell Colour, 10YR 5/6), moist, friable, non-calcareous SAND with a single grain structure. The sample was stone free, and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

Tim O'Hare Associates LLP Howbery Park Wallingford Oxfordshire OX10 8BA T:01491 822653 E:info@toha.co.uk www.toha.co.uk



Plate 1: Kent Medium Contract Sand Sample

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition of the sand. The following parameters were determined:

- detailed particle size analysis (5 sands, silt, clay);
- stone content (2-20mm, 20-75mm, >75mm);
- saturated hydraulic conductivity;
- pH and electrical conductivity (1:2.5 water extract);
- exchangeable sodium percentage;
- calcium carbonate;
- organic matter content;
- visible contaminants;
- heavy metals (Sb, As, B, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Saturated Hydraulic Conductivity

The sample had a total sand content of 96%. Further detailed particle size analysis revealed the sample to have a narrow particle size distribution, with a predominance of *medium sand* (0.25-0.50mm).

If used as a subsoil for landscaping applications, it could be described as 'free-draining', as confirmed by the saturated hydraulic conductivity result (294 mm/hr).

Stone Content

The sample was stone-free and, as such, stones should not restrict the use of the sand for landscape applications.

pH and Electrical Conductivity Values

The sample was acid in reaction (pH 5.6), with a low calcium carbonate (lime) content. This pH value should not restrict the use of the sand for most landscaping applications unless an alkaline / calcareous sand is specifically required.

The electrical conductivity (salinity) values (water and CaSO₄ extract) were low, which indicates that soluble salts were not present at elevated levels.

Organic Matter Content

The organic matter content of the sand was very low (<0.5%).

Potential Contaminants

In the absence of site-specific assessment criteria, the concentrations of selected potential contaminants that affect human health have been assessed for the concentrations that affect human health have been assessed for *residential* end-use against the Suitable For Use Levels (S4ULs) presented in the LQM/CIEH S4ULs for Human Health Risk Assessment (2015) and the DEFRA SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none exceeded their respective guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum recommended levels.

COMMENTS

The sand represented by this sample has the following properties:

- Narrow particle size distribution
- Low fines content
- High drainage rate
- Low pH value and lime content
- Non-saline
- Inorganic

Based on these characteristics, the sand represented by this sample may have potential for re-use in a number of landscape application where a free-draining sand is required, examples of which could include:

- A free-draining, compaction resistant subsoil for landscape environments where a higher level of permeability and porosity in the subsoil layer is required, e.g. when planting larger rootballed trees, for podium landscapes, or formal / high-use grass lawns;
- 2) For use as a filter medium for bioretention systems and rain gardens that may be included within Sustainable Drainage Systems (SuDS).
- 3) For use as a surface ameliorant / topdressing to improve amenity grass / sports pitch surfaces;

- 4) For use in sports pitch drainage where a free-draining sand may be required (e.g. sand grooves);
- 5) For blending with suitable ameliorant(s) to produce a high-permeability rootzone.

The suitability of this sand for any specific project or product should be carefully checked by further testing as necessary and should be approved by any project's designer / manager before use.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully

H.MacRae

Harriet MacRae BSc MSc Graduate Soil Scientist

Matthew Heins BSc (Hons) MISoilSci Senior Soil Scientist

For & on behalf of Tim O'Hare Associates LLP



Client:	Bury Hill Landscape Supplies Ltd
Project	Bury Hill Horsham Yard
Job:	Sand Analysis
Date:	22/02/2024
Job Rof No:	TOHA/24/1262/1/SS

Sample Reference			
		Accreditation	
Clav (<0.002mm)	%	UKAS	
Silt (0.002-0.05mm)	%	UKAS	
Very Fine Sand (0.05-0.15mm)	%	UKAS	
Fine Sand (0.15-0.25mm)	%	UKAS	
Medium Sand (0.25-0.50mm)	%	UKAS	
Coarse Sand (0.50-1.0mm)	%	UKAS	
Very Coarse Sand (1.0-2.0mm)	%	UKAS	
Total Sand (0.05-2mm)	%	UKAS	
Peterse (2.20mm)	 0/ DW/	OKAS	
Stones (20-75mm)	% DW	GLP	
Stones (>75mm)	% DW	GLP	
Saturated Hydraulic Conductivity	mm/hr	A2LA	
nH Value (1·2 5 water extract)	units	LIKAS	
Calcium Carbonate	%	UKAS	
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS	
Electrical Conductivity (1:2 CaSO ₄ extract)	uS/cm	UKAS	
Organic Matter (LOI)	%	UKAS	
Exchangeable Sodium Percentage	%	UKAS	
Visible Contaminants: Plastics >2.00mm	%	UKAS	
visible Contaminants: Sharps >2.00mm	%	UKAS	
Total Antimony (Sb)	ma/ka	MCERTS	
Total Arsenic (As)	ma/ka	MCERTS	
Total Barium (Ba)	mg/kg	MCERTS	
Total Beryllium (Be)	mg/ka	MCERTS	
Total Cadmium (Cd)	mg/kg	MCERTS	
Total Chromium (Cr)	mg/kg	MCERTS	
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS	
Total Copper (Cu)	mg/kg	MCERTS	
Total Lead (Pb)	mg/kg	MCERTS	
Total Mercury (Hg)	mg/kg	MCERTS	
Total Nickel (Ni)	mg/kg	MCERTS	
Total Selenium (Se)	mg/kg	MCERTS	
Total Vanadium (V)	mg/kg	MCERTS	
Total Zinc (Zn)	mg/kg	MCERTS	
Water Soluble Boron (B)	mg/kg	MCERTS	
Total (mono) Phenols	mg/kg mg/kg	MCERTS	
Naahthalana	ma/ka	MCERTS	
Aconophthylono	mg/kg	MCERTS	
Acenaphthene	mg/kg	MCERTS	
Fluorene	mg/kg	MCERTS	
Phenanthrene	mg/kg	MCERTS	
Anthracene	ma/ka	MCERTS	
Fluoranthene	mg/kg	MCERTS	
Pyrene	mg/kg	MCERTS	
Benz(a)anthracene	mg/kg	MCERTS	
Chrysene	mg/kg	MCERTS	
Benzo(b)fluoranthene	mg/kg	MCERTS	
Benzo(k)fluoranthene	mg/kg	MCERTS	
Benzo(a)pyrene	mg/kg	MCERTS	
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS	
Dibenzo(a,h)anthracene	mg/kg	MCERTS	
Benzo(g,h,i)perylene	mg/kg	MCERTS	
TOTAL PARS (SUM USEPA16)	mg/kg	MCERIS	
Aliphatic TPH >C5 - C6	mg/kg	MCERTS	
Aliphatic TPH >C6 - C8	mg/kg	MCERTS	
Aliphatic TPH >C8 - C10	mg/kg	MCERTS	
Aliphatic TPH >C10 - C12	mg/kg	MCERTS	
Aliphatic TPH >C12 - C16	mg/kg	MCERTS	
Aliphatic TPH >C16 - C21	mg/kg	MCERTS	
Aliphatic TPH >C21 - C35	mg/kg	MCERTS	
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS	
Aromatic TPH >C5 - C7	mg/kg	MCERTS	
Aromatic TPH >C7 - C8	mg/kg	MCERTS	
Aromatic TPH >C8 - C10	mg/kg	MCERTS	
Aromatic IPH >C10 - C12	mg/kg	MCERTS	
Aromatic TPH >C12 - C16	mg/kg	MCERTS	
Aromatic TPH >C16 - C21	mg/kg	MUERIS	
Aromatic TPH >C21 - C35 Aromatic TPH (C5 - C35)	mg/kg	MCERTS	
	iiig/kg	WOLKIG	
Benzene	mg/kg	MCERTS	
Toluene	mg/kg	MCERTS	
Ethylbenzene	mg/kg	MCERTS	
p & m-xylene	mg/kg	MCERTS	
o-xylene	mg/kg	MCERTS	
MIBE (Methyl Tertiary Butyl Ether)	mg/kg	MCERTS	
Aspestos	D/ND	ISO 17025	

Kent Medium Contract Sand	
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Not-detected

S = SAND

Visual Examination
The sample can be described as a yellowish brown (Munsell Colour, 10YR 5/6), moist, friable, non-calcareous SAND with a single grain
structure. The sample was stone free, and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

Results of analysis should be read in conjunction with the report they were issued with.

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Harriet MacRae BSc MSc Graduate Soil Scientist