Freeland
HORTICULTURE LIMITED

Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Attention: Philippa Lambourne

Our Ref: 1244-SA

2 February 2024

Dear Philippa

Topsoil Analysis Report : Meriden Topsoil –January 2024

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- pH & electrical conductivity values;
- major plant nutrients (N, P, K, Mg) & organic matter content;
- particle size distribution and stone content;
- heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- sulphate, sulphur, sulphide;
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16)
- banded aromatic and aliphatic petroleum hydrocarbons (C_5-C_{35}).
- Asbestos

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

COMMENTS

pH & Electrical Conductivity (salinity) Values

The sample was alkaline in nature (pH 7.8) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was 1133µS/cm indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by $CaSO_4$ extract (BS3882 requirement) fell below the maximum specified value (3300µS/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 82% sand and fell into The sandy loam texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (4.30%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compare with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in. 'The LQM/CIEH S4Uls' for Human Health Risk Assessmet (2015) and 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 was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, sandy loam. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

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Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Meriden, West Midlands
Month/Year	January 24
Our Ref	1244-SA
Date	02 February 2024

		Composite sample
pH Value & Salinity		
pH value (1:2.5 soil/water ext)	units	7.8
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	1133
Electrical Conductivity (1:2.5 soil/CaSO4 ext)	µS/cm	2795
Organic Matter & Nutrient Status		
Organic Matter (LOI)	%	4.8
Organic Carbon (Derived)	%	2.8
Total Nitrogen	%	0.154
Carbon:Nitrogen Ratio	:1	18.1
Available Phosphorus	mg/l	34.4
Available Potassium	mg/l	636
Available Magnesium	mg/l	135
Particle Size Analysis & Stones		
Clay (<0.002mm)	%	8
Silt (0.063-0.002mm)	%	10
Sand (2.0-0.063mm)	%	82
Texture Class	UK Class	Sandy Loam
Stones 2-20mm	% by DW	3.8
Stones 20-50mm	% by DW	1.2
Stones >50mm	% by DW	0.0
Potential Contaminants		
Total Arsenic (As)	mg/kg	5.6
Total Cadmium (Cd)	mg/kg	0.18
Total Chromium (Cr)	mg/kg	37.2
Hexavalent Chromium (CR^{VI})	mg/kg	<0.2
Total Copper (Cu)	mg/kg	24.5
Total Lead (Pb)	mg/kg	11.6
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	15.6
Total Selenium (Se)	mg/kg	0.14
Total Zinc (Zn)	mg/kg	45.6
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	42.9
Total Vanadium (V)	mg/kg	12.0
Hot Water Soluble Boron (B)	mg/kg	1.4
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	10.5
Easily Liberated Sulphide (S^{2-})	mg/kg	<1
Water Soluble Sulphate (SO_4^{2-})	mg/l	454
Total Phenol Index	mg/kg	<1
Asbestos Screen	-	N.D.

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Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C_5-C_6	mg/kg	<0.05
Aliphatic TPH >C_6-C_8	mg/kg	<0.05
Aliphatic TPH >C_8-C_{10}	mg/kg	<0.05
Aliphatic TPH >C_{10}-C_{12}	mg/kg	<10
Aliphatic TPH >C_{12}-C_{16}	mg/kg	<10
Aliphatic TPH >C_{16}-C_{21}	mg/kg	<10
Aliphatic TPH >C_{21}-C_{35}	mg/kg	27.0
Aliphatic TPH >C_{35}-C_{44}	mg/kg	<12

Aromatic TPH >C_5-C_7	mg/kg	<0.05
Aromatic TPH >C_7-C_8	mg/kg	<0.05
Aromatic TPH >C_8-C_{10}	mg/kg	<0.05
Aromatic TPH >C_{10}-C_{12}	mg/kg	<10
Aromatic TPH >C_{12}-C_{16}	mg/kg	<10
Aromatic TPH >C_{16}-C_{21}	mg/kg	<10
Aromatic TPH >C_{21}-C_{35}	mg/kg	<10
Aromatic TPH >C_{35}-C_{44}	mg/kg	<12

Total Petroleum Hydrocarbons (C5-C44)	mg/kg	27.0

BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p- Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1