



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

Attention: Philippa Lambourne

Our Ref: SLC-924-SA

6 May 2021

Dear Philippa

***Topsoil Analysis Report: Astley, Greater Manchester Topsoil – May 2021***

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<sub>5</sub>-C<sub>35</sub>).
- ⊕ Asbestos

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

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***Phone: 01322 619161;***

***Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT  
Company Registration No: 04015968***

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## COMMENTS

### **pH & Electrical Conductivity (salinity) Values**

The sample was alkaline in nature (pH 8.3) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (654 $\mu$ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO<sub>4</sub> extract (BS3882 requirement) fell below the maximum specified value (3300 $\mu$ S/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 71% 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 (3.4%). 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 compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (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, loamy sandy. 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.

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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.

|            |                            |
|------------|----------------------------|
| Client     | Freeland Horticulture Ltd  |
| Job Name   | Topsoil Analysis           |
| Site       | Astley, Greater Manchester |
| Month/Year | May 21                     |
| Our Ref    | 0924-SA                    |
| Date       | 06 May 2021                |

Composite sample

**pH Value & Salinity**

|                                                            |       |      |
|------------------------------------------------------------|-------|------|
| pH value (1:2.5 soil/water ext)                            | units | 8.3  |
| Electrical Conductivity (1:2.5 soil/water ext)             | µS/cm | 654  |
| Electrical Conductivity (1:2.5 soil/CaSO <sub>4</sub> ext) | µS/cm | 2525 |
| Neutralising Value (CaCO <sub>3</sub> equivalent)          | %     | 4.3  |

**Organic Matter & Nutrient Status**

|                          |      |       |
|--------------------------|------|-------|
| Organic Matter (LOI)     | %    | 3.4   |
| Organic Carbon (Derived) | %    | 2.0   |
| Total Nitrogen           | %    | 0.107 |
| Carbon:Nitrogen Ratio    | :1   | 18.5  |
| Available Phosphorus     | mg/l | 25.2  |
| Available Potassium      | mg/l | 542   |
| Available Magnesium      | mg/l | 161   |

**Particle Size Analysis & Stones**

|                      |          |            |
|----------------------|----------|------------|
| Clay (<0.002mm)      | %        | 10         |
| Silt (0.063-0.002mm) | %        | 19         |
| Sand (2.0-0.063mm)   | %        | 71         |
| Texture Class        | UK Class | Sandy Loam |

|                |         |     |
|----------------|---------|-----|
| Stones 2-20mm  | % by DW | 3.4 |
| Stones 20-50mm | % by DW | 0.0 |
| Stones >50mm   | % by DW | 0.0 |

**Potential Contaminants**

|                                                         |       |      |
|---------------------------------------------------------|-------|------|
| Total Arsenic (As)                                      | mg/kg | 3.1  |
| Total Cadmium (Cd)                                      | mg/kg | 0.14 |
| Total Chromium (Cr)                                     | mg/kg | 16.8 |
| Hexavalent Chromium (Cr <sup>VI</sup> )                 | mg/kg | <0.2 |
| Total Copper (Cu)                                       | mg/kg | 9.1  |
| Total Lead (Pb)                                         | mg/kg | 16.6 |
| Total Mercury (Hg)                                      | mg/kg | <0.2 |
| Total Nickel (Ni)                                       | mg/kg | <10  |
| Total Selenium (Se)                                     | mg/kg | 0.13 |
| Total Zinc (Zn)                                         | mg/kg | 33.5 |
| Total Beryllium (Be)                                    | mg/kg | <1   |
| Total Barium (Ba)                                       | mg/kg | 33.4 |
| Total Vanadium (V)                                      | mg/kg | 10.2 |
| Hot Water Soluble Boron (B)                             | mg/kg | 0.8  |
| Total Cyanide (CN <sup>-</sup> )                        | mg/kg | <1   |
| Elemental Sulphur (S)                                   | mg/kg | <5   |
| Easily Liberated Sulphide (S <sup>2-</sup> )            | mg/kg | <1   |
| Water Soluble Sulphate (SO <sub>4</sub> <sup>2-</sup> ) | mg/l  | 144  |
| Total Phenols 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 | 0.2   |
| 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 <sub>5</sub> -C <sub>6</sub>   | mg/kg | 1.60 |
| Aliphatic TPH >C <sub>6</sub> -C <sub>8</sub>   | mg/kg | 0.25 |
| Aliphatic TPH >C <sub>8</sub> -C <sub>10</sub>  | mg/kg | 0.05 |
| Aliphatic TPH >C <sub>10</sub> -C <sub>12</sub> | mg/kg | <10  |
| Aliphatic TPH >C <sub>12</sub> -C <sub>16</sub> | mg/kg | <10  |
| Aliphatic TPH >C <sub>16</sub> -C <sub>21</sub> | mg/kg | <10  |
| Aliphatic TPH >C <sub>21</sub> -C <sub>35</sub> | mg/kg | 14.0 |
| Aliphatic TPH >C <sub>35</sub> -C <sub>44</sub> | mg/kg | 20.0 |

|                                                |       |       |
|------------------------------------------------|-------|-------|
| Aromatic TPH >C <sub>5</sub> -C <sub>7</sub>   | mg/kg | <0.05 |
| Aromatic TPH >C <sub>7</sub> -C <sub>8</sub>   | mg/kg | <0.05 |
| Aromatic TPH >C <sub>8</sub> -C <sub>10</sub>  | mg/kg | <0.05 |
| Aromatic TPH >C <sub>10</sub> -C <sub>12</sub> | mg/kg | <10   |
| Aromatic TPH >C <sub>12</sub> -C <sub>16</sub> | mg/kg | <10   |
| Aromatic TPH >C <sub>16</sub> -C <sub>21</sub> | mg/kg | <10   |
| Aromatic TPH >C <sub>21</sub> -C <sub>35</sub> | mg/kg | 15.0  |
| Aromatic TPH >C <sub>35</sub> -C <sub>44</sub> | mg/kg | 22.0  |

|                                                                 |       |      |
|-----------------------------------------------------------------|-------|------|
| Total Petroleum Hydrocarbons (C <sub>5</sub> -C <sub>44</sub> ) | mg/kg | 72.8 |
|-----------------------------------------------------------------|-------|------|

#### 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  |