



**TIM O'HARE ASSOCIATES**  
SOIL & LANDSCAPE CONSULTANCY

Mr Andy Spetch  
British Sugar plc Co-Products  
Oundle Road  
Peterborough  
PE2 9QU

2<sup>nd</sup> January 2007

Our Ref: TOHA/07/2241  
Your Ref: as below

Dear Mr Spetch

**RE: Topsoil Analysis Report : Bury St Edmunds – BU/0610/STS**

We have completed the analysis of the TOPSOIL sample recently submitted and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the TOPSOIL sample for general landscaping purposes.

***SAMPLE EXAMINATION***

The soil was described as a brown, dry, friable SANDY LOAM with a moderately developed, fine to coarse granular and subrounded blocky structure. The sample was very slightly stony and no deleterious materials, roots or rhizomes of pernicious weeds were observed.

***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 and fertility of the soil, and the absence of potential contaminants. The following parameters were determined:

- particle size analysis and stone content;
- pH value;
- electrical conductivity values (CaSO<sub>4</sub> and water extracts);
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- heavy metals (As, Ba, Br, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn, B);
- soluble sulphate, elemental sulphur, acid volatile sulphide;
- total cyanide and total (mono) phenols;
- total petroleum hydrocarbons (C10-C40).
- speciated PAHs (US EPA16 suite)

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Tim O'Hare Associates LLP  
Howbery Park Wallingford Oxfordshire OX10 8BA  
T:01491 822653 F:01491 822609 E:info@toha.co.uk  
www.toha.co.uk

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below. The interpretation considers the use of the TOPSOIL for general landscaping purposes and its compliance/non-compliance with our general landscape specification.

In the absence of site-specific criteria, the concentrations of the potential contaminants determined have been assessed with reference to the Soil Guideline Values (SGVs) for residential end-use with plant uptake, which are presented in the Contaminated Land Exposure Assessment (CLEA) Model (EA/DEFRA:2002). The SGVs currently consider a limited range of parameters so where a potential contaminant is not covered by the CLEA Model other relevant schedules and guidelines for contamination assessment have been used, for example the New Dutch List, as well as professional judgment.

## **RESULTS OF ANALYSIS**

### **Particle Size Analysis and Stone Content**

The sample fell into the *sandy loam* texture class. This particle size distribution is considered suitable for general landscaping purposes, including shrub planting, native transplants, amenity grass turfing and seeding.

The stone content of the sample was very low and, as such, stones will not restrict the use of the soil for any landscaping purposes.

### **pH and Electrical Conductivity Values**

The sample was alkaline in reaction (pH 7.6) with a pH value that would be suitable for general landscaping purposes, including the majority of tree and shrub species and grass cultivars used in commercial and domestic landscaping.

The electrical conductivity (salinity) values were low, indicating that soluble salts were not present at levels that would be harmful to plants.

### **Organic Matter and Fertility Status**

The sample was adequately supplied with most major plant nutrients, but was a little deficient in organic matter (for tree and shrub planting only) and total nitrogen. The deficiencies can easily be remedied by compost and/or fertiliser applications.

### **Potential Contaminants**

Of the potential contaminants determined, none was found at levels that would indicate significant contamination.

## **CONCLUSION**

The purpose of the analysis was to determine the suitability of the TOPSOIL sample for general landscaping purposes. From the soil examination and laboratory analysis, the sample is described as an alkaline, non-saline sandy loam with an adequate structure and very low stone content. The fertility status was low to moderate and no potential contamination was found with respect to the parameters determined.

To conclude, based on our findings, the TOPSOIL sample is considered suitable for general landscaping purposes provided its physical condition is maintained, and the organic matter and nitrogen levels are raised by appropriate compost or fertiliser applications.

### **Trees and Shrubs**

We recommend applying and incorporating a suitable compost (eg. green compost) into TOPSOIL that is to be used for tree and shrub planting, at a rate of 20% by volume. For tree pit planting, we recommend only incorporating the compost into the upper 400mm layer of backfill soil. This is to reduce the risk of anaerobic conditions developing in the lower portion of the tree pit. This single application will address both the organic matter and nitrogen deficiencies.

### **Amenity Grass Areas**

To address any deficiencies and to help promote effective establishment, we recommend applying and incorporating the pre-seeding grass fertiliser *Scotts PS5 Preseeder* (8%N:12%P<sub>2</sub>O<sub>5</sub>:8%K<sub>2</sub>O +2%Mg+seaweed extract) prior to seeding or turfing at a rate of 35 g/m<sup>2</sup> and to a depth of 100mm.

### **Soil Handling Recommendations**

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (eg. topsoil stripping, stockpiling, resspreading, cultivating, planting). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall, and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of the soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

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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 we can be of further assistance.

Yours sincerely

**Tim O'Hare**  
*BSc MSc MISOilSci MBIAC CSci*  
*Principal Soil Consultant*



Client:	<b>British Sugar plc Co-Products</b>
Client Ref:	<b>Bury St Edmunds</b>
Date:	<b>January 2007</b>
Job Ref No:	<b>TOHA/07/2241</b>

**Sample Reference**

Clay (<0.002mm)	%	U
Silt (0.002-0.063mm)	%	U
Sand (0.063-2.0mm)	%	U
Texture Class (UK Classification)	--	U
Stones (2-20mm)	% DW	G
Stones (20-50mm)	% DW	G
Stones (>50mm)	% DW	G

pH Value (1:2.5 water extract)	units	G
Electrical Conductivity (1:2.5 water extract)	uS/cm	U
Electrical Conductivity (1:2 CaSO4 extract)	uS/cm	U
Moisture Content	%	G
Organic Matter (WB)	%	U
Total Nitrogen (Dumas)	%	U
Extractable Phosphorus	mg/l	U
Extractable Potassium	mg/l	U
Extractable Magnesium	mg/l	U

Total Arsenic (As)	mg/kg	M
Total Barium (Ba)	mg/kg	M
Total Beryllium (Be)	mg/kg	M
Total Cadmium (Cd)	mg/kg	M
Total Chromium (Cr)	mg/kg	M
Total Copper (Cu)	mg/kg	M
Total Lead (Pb)	mg/kg	M
Total Mercury (Hg)	mg/kg	M
Total Nickel (Ni)	mg/kg	M
Total Selenium (Se)	mg/kg	M
Total Vanadium (V)	mg/kg	M
Total Zinc (Zn)	mg/kg	M
Water Soluble Boron (B)	mg/kg	M
Total Cyanide (CN)	mg/kg	M
Total (mono) Phenols	mg/kg	U
Elemental Sulphur (S)	mg/kg	M
Acid Volatile Sulphide (S)	mg/kg	U
Water Soluble Sulphate (SO4)	g/l	M
TPH by GC-FID (C10-C40)	mg/kg	M

Naphthalene	mg/kg	M
Acenaphthylene	mg/kg	M
Acenaphthene	mg/kg	M
Fluorene	mg/kg	M
Phenanthrene	mg/kg	M
Anthracene	mg/kg	M
Fluoranthene	mg/kg	M
Pyrene	mg/kg	M
Benzo(a)anthracene	mg/kg	M
Chrysene	mg/kg	M
Benzo(b)fluoranthene	mg/kg	M
Benzo(k)fluoranthene	mg/kg	M
Benzo(a)pyrene	mg/kg	M
Indeno(1,2,3-cd)pyrene	mg/kg	M
Dibenzo(a,h)anthracene	mg/kg	M
Benzo(g,h,i)perylene	mg/kg	M
Total PAHs (sum USEPA16)	mg/kg	M

**BU/0610/STS**

10	✓
16	✓
74	✓
SL	✓
1	✓
0	✓
0	✓

7.6	✓
573	✓
2334	✓
17	✓
2.4	X
0.17	X
53	✓
624	✓
119	✓

5	✓
25	✓
0.3	✓
<0.1	✓
14	✓
9	✓
15	✓
<0.1	✓
8	✓
0.2	✓
18.0	✓
29	✓
2.0	✓
<1	✓
<1	✓
<20	✓
<1	✓
0.2	✓
<50	✓

<0.1	✓
<0.1	✓
<0.1	✓
<0.1	✓
0.3	✓
<0.1	✓
0.5	✓
0.4	✓
<0.1	✓
0.2	✓
0.1	✓
0.1	✓
<0.1	✓
<0.1	✓
<0.1	✓
<1.6	✓

**Visual Examination**

Brown, dry, friable sandy loam with a moderately developed fine to coarse granular and subrounded blocky structure. Very slightly stony, no observable deleterious materials, including foreign matter (brick concrete glass metal plastic) and roots or rhizomes of pernicious weeds (including couch grass and Japanese knotweed)

✓	Meets General Landscape Specification
X	Fails General Landscape Specification
SL	Sandy Loam Texture Class
M	MCERTS accredited method (& UKAS accredited method)
U	UKAS accredited method
G	GLP accredited method