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Ref: 16-217-L1
Date: 14th July 2022

Mr Adrian Cronin
GMI Construction Group
Manchester Office
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

BY Email

Dear Adrian,

SOIL CLASSIFICATION LETTER CHURCH INN, MANCHESTER

1. BACKGROUND AND OBJECTIVES

E3P have been instructed by GMI Construction Group (the client) to provide a soil classification letter with respect to material due to be imported for placement within the proposed cover system at the site.

E3P understand the client intend to construct a twelve-storey block of student accommodation at the site, located at No. 84 Cambridge Street, Manchester.

The purpose of this letter is to review physical properties and chemical analysis results to confirm the suitability of the topsoil material for import. The topsoil will be provided by Tim O'Hare Associates.

E3P has been provided with the following documents to review;

-  NRM Laboratories – Certificate of Analysis (Ref: 16738 – 562855) dated 24th May 2022; and

The NRM Laboratories analysis report details the BS 3882 : 2015 SPECIFICATION FOR TOPSOIL results.

-  Tim O'Hare Associates – Topsoil Analysis Report: Barnsdale Premium GT2 (Ref: TOHA/22/7340/2/SS) dated 21st February 2022.

The Topsoil Analysis Report: Barnsdale Premium GT2 letter details the chemical concentrations of the topsoil material.



1.1. BS 3882 SPECIFICATION FOR TOPSOIL

The BS 3882 results indicate the soils to be suitable for multi-purpose use within a cover system, tree pits and planter beds.

1.2. CHEMICAL ANALYSIS

E3P has undertaken a review of the analysis results against the Tier 1 thresholds for residential end use without plant uptake.

The qualitative risk assessment indicates there are no exceedances for any contaminants of concern within the soils and therefore this material is suitable to import for placement in the cover system.

I trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,

For and on behalf of E3P Ltd

Alex Smith
Associate Director



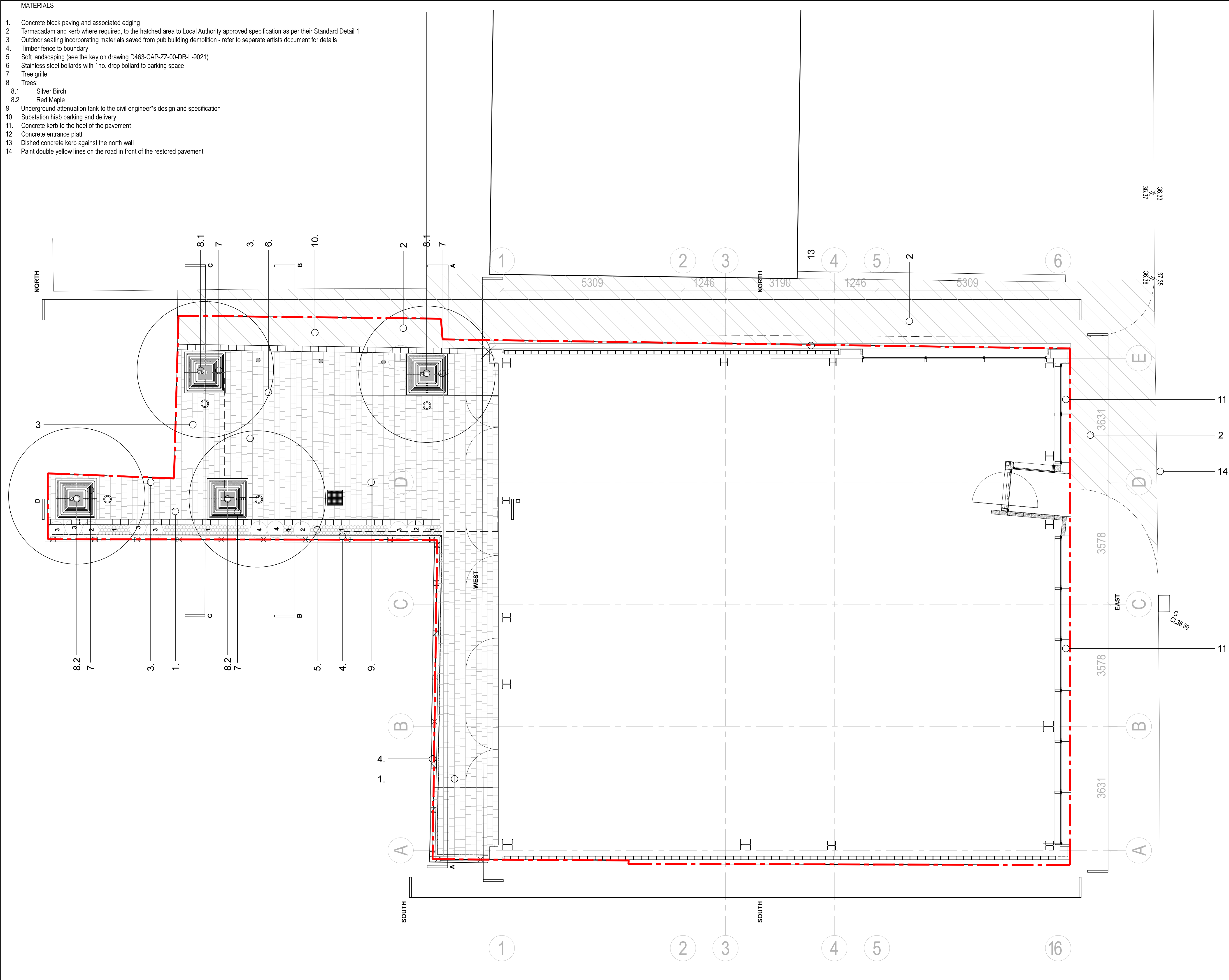
Enclosed

Appendix I	Drawings
	AL(90)001 External Works Landscape Plan
Appendix II	Chemical Analysis Results
Appendix III	BS 3882 Specification for Topsoil Results



APPENDIX I

DRAWINGS



APPENDIX II

CHEMICAL ANALYSIS

TESTING RESULTS



TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Mark Wood
Green-tech Ltd
Rabbit Hill Park
Great North Road
Arkendale
Knaresborough
North Yorkshire HG5 0FF

21st February 2022
Our Ref: TOHA/22/7340/2/SS
Your Ref: PO 417525

Dear Sirs

Topsoil Analysis Report: Barnsdale Premium GT2

We have completed the analysis of the soil sample recently submitted, referenced *Barnsdale Premium GT2 Topsoil* and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the sample for general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for topsoil and requirements for use – Table 1, Multipurpose Topsoil*).

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing, especially after the topsoil has left the Green-tech Ltd site.

SAMPLE EXAMINATION

The sample was described as a reddish brown (Munsell Colour 5YR 4/3), moist, friable, non-calcareous SAND with a single grain structure. The sample was slightly stony and contained a high proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

Tim O'Hare Associates LLP
Howbery Park Wallingford Oxfordshire OX10 8BA
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www.toha.co.uk

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 concentration of selected potential contaminants. The following parameters were determined:

- detailed particle size analysis (5 sands, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- total cyanide and total (mono) phenols;
- aromatic and aliphatic TPH (C5-C35 banding);
- speciated PAHs (US EPA16 suite);
- 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

Detailed Particle Size Analysis and Stone Content

The sample fell into the *sand* texture class, and fell outside of the required texture range specified in the BS3882:2015 – Figure 1. Such soils typically have good aeration and drainage properties, but can possess reduced water and nutrient retention capacities. However, in this instance the soil's high organic matter content is likely to offset these factors and provide a suitable growing medium for most landscape applications.

Further detailed particle size analysis revealed the sample to have a sufficiently narrow particle size distribution and a predominance of *medium sand* (0.25-0.50mm) followed by smaller proportions of *fine sand* (0.15-0.25mm). This is usually ideal for topsoil in general landscape applications as reasonable porosity levels are generally maintained in a consolidated state and the risk of particle interpacking is reduced. The sample should therefore provide adequate drainage and aeration properties for general landscape applications.

The stone content of the sample was low and, as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.4). This pH value would be considered suitable for general landscape purposes provided species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 µS/cm) given in BS3882:2015 – Table 1.

Organic Matter and Fertility Status

The sample was well supplied with organic matter and all major plant nutrients.

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

Potential Contaminants

With reference to *BS3882:2015 - Table 1*: Notes 3 and 4, there is a requirement to confirm levels of potential contaminants in relation to the topsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations that affect human health have been compared with the *residential with home grown produce* land use in 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 (C4SLs) for Assessment of Land Affected by Contamination – Policy Companion Document* (2014).

Of the potential contaminants determined, none was found at levels that exceeded their guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil sample for general landscape purposes. The analysis has also been undertaken to determine the sample's compliance with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for topsoil and requirements for use – Table 1, Multipurpose Topsoil*).

From the soil examination and subsequent laboratory analysis, the sample was described as a strongly alkaline, non-saline, non-calcareous sand with a single grain structure and low stone content. The sample was well supplied with organic matter and all major plant nutrients. Of the potential contaminants determined, none exceeded their respective guideline values.

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes provided only species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding and the soil's physical condition is satisfactory.

The organic matter content of the topsoil would probably be considered acceptable for lower foot traffic, lower performance amenity grass areas (e.g. road verges). However, the high organic matter content of the topsoil may lead to variable settlement and a soft, uneven surface if used for higher performance amenity grass establishment, e.g. sports pitches or formal lawns.

The topsoil was largely compliant with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*) with the exception of a high sand content. On this occasion, given the high organic matter content of the sample, this is considered a minor non-compliance.

General Landscape Environments

Rootballed Trees

The most demanding planting environment is semi-mature, pit planted trees. Trees of this size and age have grown accustomed to optimum growing conditions in the nursery, and these need to be replicated when the rootballed or containerised tree is planted in the pit. In particular, aeration and drainage around the rootball are critical. Without these properties, trees will very quickly suffer and possibly die during their first few growing seasons after planting.

The topsoil can be used as backfill in tree pits to a maximum depth of 400mm, provided the topsoil is kept dry and non-plastic during planting.

Shrubs

Containerised shrubs are generally more tolerant of a wider range of soil-types, and they require less topsoil to root into than trees. The topsoil would be suited to a range of shrubs typically used in commercial and domestic landscaping.

Forestry Stock

Less demanding planting habitats include indigenous woodland planting, planted as small whips and feathered trees. The topsoil would be suitable for such planting environments.

Amenity Grass Lawn

This soil would not be considered ideal for amenity grass lawns on account of its high organic matter content. As organic matter decomposes, the topsoil volume reduces, leading to an uneven surface which may be undesirable in lawn areas.

Sports Pitches

This soil is not ideally suited for sports pitch construction due to its high organic matter content. There may be scope to use the soil as a component in a blended sand/soil rootzone. All materials to be used for sports pitch construction, including topsoil should be carefully considered in relation to the required drainage performance of a specific project.

Domestic Gardens

The horticultural properties of the soil would be suitable for domestic garden applications. In addition, of the potential contaminants determined, none was found at levels that would be considered elevated. However, permissible levels for potential contaminants do vary from site to site. Therefore, the suitability of topsoil represented by this sample for any particular project or development should be confirmed by comparing the results against the site's specific assessment criteria.

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, resspreading, cultivating, planting, seeding or turfing). 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 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.

Further details on soil handling are provided in Annex A of BS3882:2015.

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



Tilly Kimble-Wilde
BSc MSc
Graduate Soil Scientist



Helen Stanley
BSc MSc MISOilSci CSci
Senior Associate

For & on behalf of Tim O'Hare Associates LLP



mfkimble-wilde
Tilly Kimble-Wilde
BSc MSc
Graduate Soil Scientist

APPENDIX III

BS 3882 SPECIFICATION FOR TOPSOIL RESULTS



Certificate of Analysis

Client: STUART BALDWIN
(T283) SED SERVICES LTD
LANDGATE FARM
LANDGATE LANE
BRYN
WIGAN WN4 0EJ

Originator: TOPSOIL
SOIL

Lab ID: 16738 - 562855
Sample ID: TOPSOIL SAMPLE
Sample Weight: 675g

Date Received: 09/05/2022
Date Reported: 24/05/2022

BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Multipurpose Grade

				Compliant with range (Y/N)					
				Multi-P	Acid	Calc	Low-F	Low-F Acid	Low-F Calc
Texture:	Clay	% w/w	13						
	Silt	% w/w	7						
	Sand	% w/w	80						
	Textural Class		Organic Sandy Loam	Y	Y	Y	Y	Y	Y
				<i>See area of permitted soil textural classes in Fig. 1.</i>					
Organic Matter:		% w/w	13.6	Y	Y	Y	Y	Y	Y
Coarse	>2 mm	% w/w	3.8	Y	Y	Y	Y	Y	Y
Fragment	>20 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Content:	>50 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Soil pH:			8.1	Y	N	Y	Y	N	Y
Carbonate:		% w/w	2.9			Y			Y
Available	Nitrogen	% w/w	0.712	Y	Y	Y			
Plant	Phosphorus	mg/l	89.4 (5)*	Y	Y	Y	N	N	N
Nutrients:	Potassium	mg/l	1243.8 (7)*	Y	N	N			
	Magnesium	mg/l	210.2 (4)*	Y	Y	Y			
Carbon:Nitrogen Ratio:		:1	11.1	Y	Y	Y	Y	Y	Y
Exchangeable Sodium Percentage:		%	8.5						
Phytotoxic	Total Zinc	mg/kg	90.4	Y	Y	Y	Y	Y	Y
Contaminants:	Total Copper	mg/kg	29.2	Y	Y	Y	Y	Y	Y
	Total Nickel	mg/kg	13.4	Y	Y	Y	Y	Y	Y
Visible	> 2mm	% w/w	0.00	Y	Y	Y	Y	Y	Y
Contaminants:	Plastics	% w/w	0.00	Y	Y	Y	Y	Y	Y
	Number of Sharps		0	Y	Y	Y	Y	Y	Y
Additional	Available Sodium	mg/l	277.0						
Analysis:	Available Calcium	mg/l	1095.0						
	Conductivity	uS/cm	1738	Y					
Compliance:				Y	N	N	N	N	N

Results are expressed on a dry matter basis.
Organic material reincorporated.
* Soil indices from RB209

Released by:

Myles Nicholson

Date: 24/05/2022

DECLARATION:

I certify that this sample has been analysed by NRM in accordance with BS 3882 Specification for Topsoil (2015).

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS

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Analytical Report

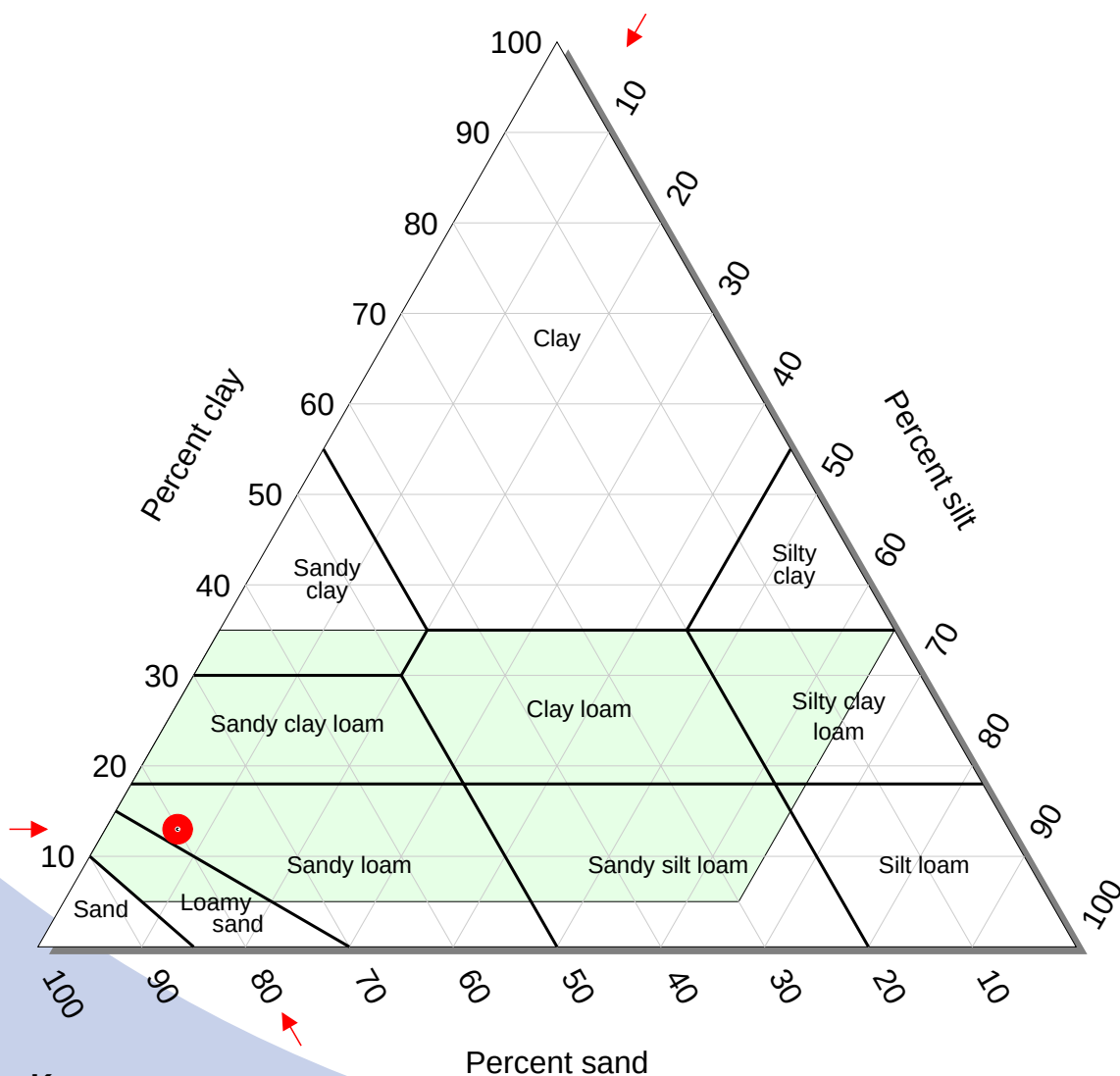
Client: STUART BALDWIN
(T283) SED SERVICES LTD
LANDGATE FARM
LANDGATE LANE
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WIGAN WN4 0EJ

Originator: TOPSOIL
SOIL

Lab ID: 16738 - 562855
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Fig. 1. Textural Class: Organic Sandy Loam (compliant)



Key



Area within which texture of topsoil is required to fall.

