



**Soil Resources Plan: Stocpile on Land at Salt Box, West of
Shripney Road, Bersted PO22 9HP**

Prepared on behalf of:

RG Group

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Quality Control

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Quality controls sign off

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1. Introduction

This report is comprised of a Soils Resources Plan (SRP) for the creation of a temporary Topsoil storage bund associated with development of the adjoining Salt Box land (Ref: BE/38/19/PL).

It has been written by Anna Becvar BSc (Hons) Ml Soil Sci, C Sci FACTS MBPR of Earthcare Technical Ltd in collaboration with MTS Environmental Ltd. Anna has a degree in Soils and Plant nutrition, is a member of the British Society of Soil Science and a Chartered Scientist.

The SRP is written to demonstrate how the topsoil resource removed from the neighbouring Salt Box development site will be preserved and stored appropriately within the designated stockpile.

It is written in response to Condition 6 of Decision Notice Ref: BE/27/20/PL from Arun District Council, requested to protect the structural integrity of the topsoil, in accordance with Policy SO DM1 of the Arun Local Plan.

The approved site plan showing the stockpile position, access track and design (Drawing No. 1744-TS-PO2-E Site Plan) is included within Appendix 1 of this report.

2. Site description

A temporary field stockpile will be formed in accordance with the following drawings and documents that were submitted with the planning application:

- Drawing No.1744-TS-PO1-D Location Plan
- Drawing No. 1744-TS-PO2-E Site Plan
- Landscape & Visual Technical Briefing Note, (Ref. 5920.BN.003), prepared by Aspect Landscape Planning Ltd, 2nd June 2020.
- Technical Briefing Note: Ecological Consideration of Proposed Topsoil Relocation / Stockpile (Ref. 1004567 BN02 SSE1 vf), Aspect Landscape Planning Ltd, April 2020.

The stockpile will be formed from 10,000 m³ of topsoil 3.0 metres in height, with 1:2.5 batter, to ensure the stockpile does not pose a significant harm to the landscape and to maintain soil quality and minimise potential damage to the soil's physical structure.

The stockpile will be placed a minimum of 10 metres from the ditch and hedgerow, (increased from the on-plan distance of 8 metres suggested) on its eastern side, this has been designated an 'exclusion zone' on site plans. The southern extent of the stockpile will be created first and soil will be removed first from the northern extent of the stockpile to minimise visual impact and ecological disturbance.

The soil will be removed from the storage site for use and the site restored back to agriculture within 5 years from the commencement of stockpiling.

The soil should be in a dry state when handled and stockpiled to lower the risk of damage to its physical structure. Soil in a dry and non-plastic state is less prone to compaction, will retain its structure, and break down into a suitable friable tilth for reuse. Any anaerobic soil also usually becomes re-aerated in a matter of days.

The soil is to be stored on an agricultural field previously in crop production. The crop was harvested autumn 2020 to leave an uncultivated stubble area, largely clear of weeds on which the soil can be placed.

Application of compost material could be seen on the soil surface with some visual evidence of plastics present.

3. Stockpiling method

There are two principal methods for forming soil stockpiles, based on their soil moisture and consistency. Both methods are described as site soils are silt clay loam to silt loam in texture and the soils plasticity will depend upon prevailing weather conditions, either may therefore be applicable.

Method 1

This should be applied to soil that is in a dry and non-plastic state. The aim is to create a large core of dry soil, and to restrict the amount of water that can get into the stockpile during the storage period. Dry soil that is stored in this manner can remain so for a period of years, (this is pertinent to this stockpile), and it is reusable within days of respreading.

The soil is loose tipped in heaps from a dump truck starting at the southern extent of stockpile area and working back toward the northern point. When a stripping and stockpiling period is completed and part of the storage area has been filled with heaps, a tracked machine (excavator or dozer) will level the heaps and firm the surface for a second layer of heaps to be tipped.

This sequence will be repeated until the stockpile reaches its planned height (3 metres). To help shed rainwater and prevent ponding and infiltration a tracked machine should be used to compact and re-grade the sides and top of the stockpile to form a smooth gradient (1:2.5 batter to perimeter of the heap).

Method 2

This should be applied if the construction programme or prevailing weather conditions result in soil having to be stockpiled when wet and/or plastic in consistency. This method minimises the amount of compaction, while at the same time maximising the surface area of the stockpile to enable the soil to dry out further. It also allows the soil to be heaped up into a 'Method 1' type stockpile once it has dried out.

For Method 2 if soils are unavoidably wet and plastic tip the soils in at least two windrows and heap the soil to a maximum of 2 m in height. To avoid compaction and loss of soil structure no machinery should track over the windrows. Once the soil has dried out combine the windrows to form a larger stockpile and form the storage heap as per method 1.

The resulting stockpile when complete should be seeded with a grass/clover mix to reduce weed infestation, protect from soil erosion, and reduce risk of run off.

4. Baseline soil samples

The site was visited 28 October 2020 and representative samples obtained of the storage field site soils and soils representative of stripped topsoil material from the Salt Box development site.

Multiple sub samples of each were obtained, using a soil auger (25 cores or more), then combined to form a representative sample to be submitted for analysis.

Both soil samples were sent to NRM Laboratories Ltd, a UKAS accredited laboratory, for analysis to BS3882:2015 Specification for Topsoil (BS3882) as well as additional potentially toxic elements: Total lead, cadmium, mercury, and cadmium.

Analytical results are provided in appendix 2 of this report.

Field soils

The field in which the stockpile is located has been actively farmed and organic manures as well as manufactured fertilisers are typically applied to meet crop requirements within each cropping season. The soil meets the specification for Low Fertility Topsoil as total nitrogen and potassium levels are too low for the soil to be categorised as Multi-purpose as without fertiliser, they may not adequately sustain crop growth. The soil is low in organic matter (2.6% w/w) and major nutrients. Soil texture is Silty Clay Loam tested to be 24% Clay, 62% Silt and 14% Sand.

Soil potentially toxic element levels for those parameters tested are low and will not be phytotoxic. indeed, they are typical of the loamy field soils within the locality.

Stripped topsoil

A quantity of stripped topsoil had been stockpiled and was therefore sampled at the time of the site visit. Weather conditions were wet, with heavy rainfall, at the time of the visit. The soil appeared well structured and friable with no signs of soil erosion or runoff.

The sampled topsoil failed to meet the BS3882 Specification for Topsoil. The topsoil falls just outside of the acceptable soil texture range being classified as a silt Loam rather than Silty Clay Loam, tested to be 18% Clay, 67% Silt and 15% Sand.

In all other respects the soil has higher, more beneficial levels of major nutrients: phosphorus, potassium, and magnesium. It has slightly higher levels of total nitrogen and a marginally higher level of organic matter (2.7% w/w) than the field soil. Potentially toxic element levels are directly comparable.

Indeed, a comparison of the analysis of the stripped material and storage field indicate they are very similar in characteristics as expected.

5. Future use of soil resource

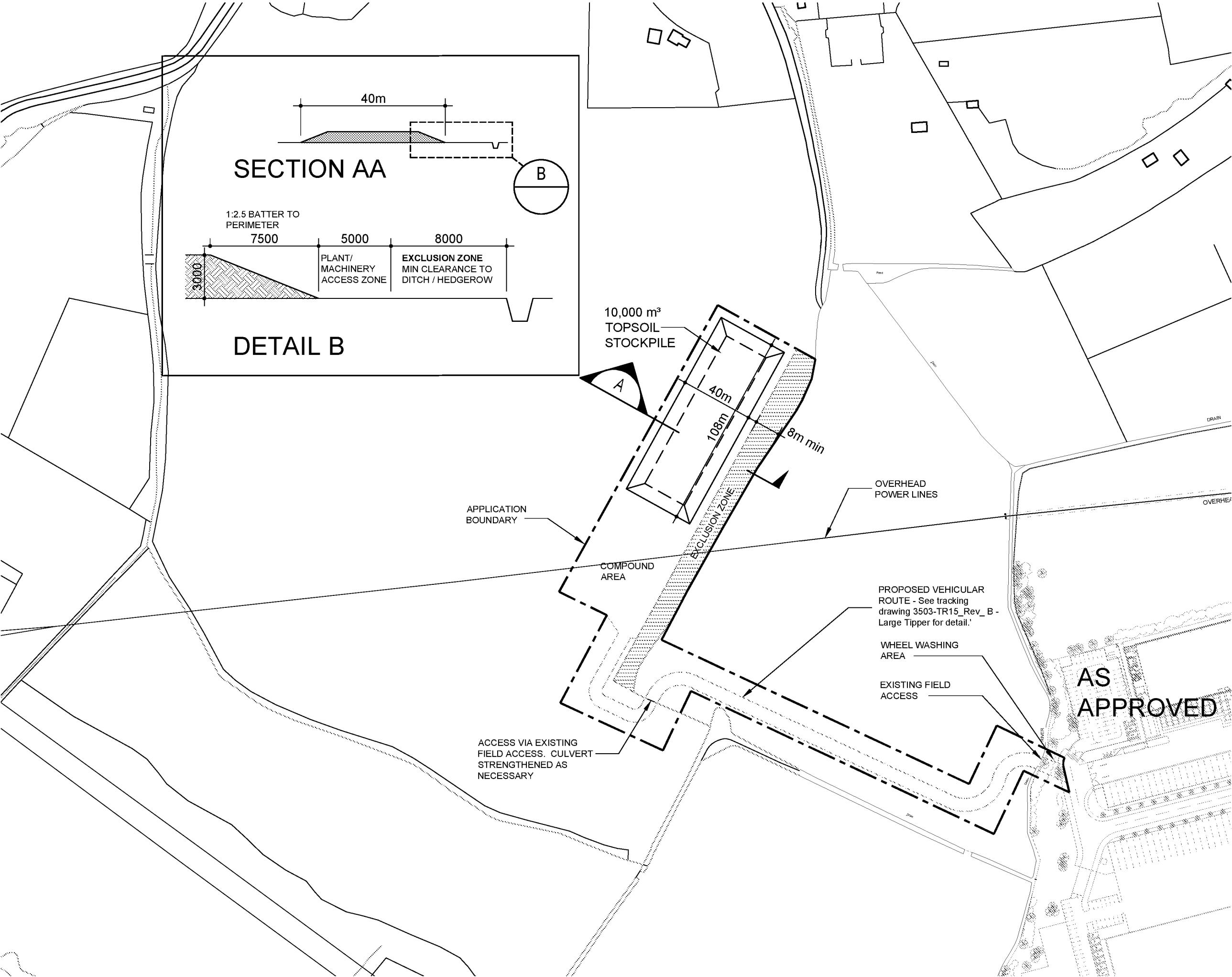
The stripped topsoil sampled and tested does not meet the BS3882 for Topsoil. It is stripped from a greenfield site formerly in intensive arable production and which would have been categorised as highly productive land.

It must be noted that the sample tested represents only a small proportion of the topsoil to be stockpiled from the Salt Box site and soil textural classification may vary spatially and therefore further samples should be taken during stockpile formation and once the finished stockpile is in situ.

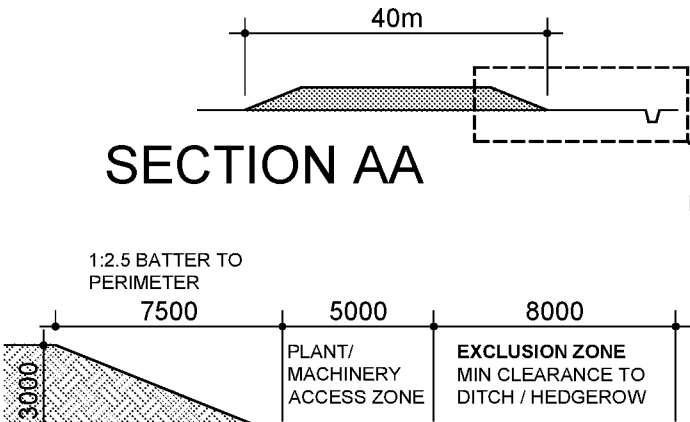
To meet BS3882 the current tested soil could be very effectively blended with a good source of organic matter and nutrients such as BSI PAS100:2014 Specification compost and soil of slightly higher clay content, to meet silty clay loam textural class.

Appendix 1 Plan of proposed mitigation land area

Appendix 2 Soil analysis reports



SECTION AA



DETAIL B

10,000 m³
TOPSOIL
STOCKPILE

A

40m

108m

8m min

APPLICATION
BOUNDARY

COMPOUND
AREA

ACCESS VIA EXISTING
FIELD ACCESS. CULVERT
STRENGTHENED AS
NECESSARY

OVERHEAD
POWER LINES

PROPOSED VEHICULAR
ROUTE - See tracking
drawing 3503-TR15_Rev_B -
Large Tipper for detail.

WHEEL WASHING
AREA

EXISTING FIELD
ACCESS

AS
APPROVED

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LIST OF INFORMANTS :

OS MAP LICENCE NO. 100019980

REVISIONS	DATE	DRN	REV
GAP TO SOUTHERN DITCH INCREASED	26.02.19	MW	A
STOCKPILE LOCATION CHANGED	01.10.19	MW	B
STOCKPILE LOCATION CHANGED	03.12.19	MW	C
APPLICATION AREA ADJUSTED AND NOTES REVISED	07.01.20	MW	D
NORTH ARROW AND SCALE BAR ADDED	24.02.20	MW	E
UPDATES IN LINE WITH ADC COMMENTS	01.06.20	MW	F

North



MountfordPigott

TOP SOIL RELOCATION
SITE PLAN
1744-TS-P02-F

1:2000 @ A3
DRAWN BY MW
12.02.19

SALTBOX, BOGNOR REGIS



Certificate of Analysis

Client: EARTHCARE TECHNICAL LTD
(K469) MANOR FARM
CHALTON
WATERLOOVILLE
HANTS
PO8 0BG

Originator: SALT BOX
BOGNOR REGIS
SOIL

Lab ID: 28863 - 495532
Sample ID: STORAGE FLD 28 10
Sample Weight: 1209g

Date Received: 30/10/2020
Date Reported: 06/11/2020

BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Specific Purpose: Low Fertility

				Compliant with range (Y/N)					
				Multi-P	Acid	Calc	Low-F	Low-F Acid	Low-F Calc
Texture:	Clay	% w/w	24						
	Silt	% w/w	62						
	Sand	% w/w	14						
	Textural Class		Silty Clay Loam	Y	Y	Y	Y	Y	Y
				<i>See area of permitted soil textural classes in Fig. 1.</i>					
Organic Matter:		% w/w	2.6	N	N	N	Y	Y	Y
Coarse	>2 mm	% w/w	1.1	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:			8.2	Y	N	Y	Y	N	Y
Carbonate:		% w/w	<1			N			N
Available	Nitrogen	% w/w	0.102	N	N	N			
Plant	Phosphorus	mg/l	16.0 (2)*	Y	Y	Y	Y	Y	Y
Nutrients:	Potassium	mg/l	103.1 (1)*	N	N	N			
	Magnesium	mg/l	57.8 (2)*	Y	Y	Y			
Carbon:Nitrogen Ratio:		:1	14.8	Y	Y	Y	Y	Y	Y
Exchangeable Sodium Percentage:		%	0.7						
Phytotoxic	Total Zinc	mg/kg	47.5	Y	Y	Y	Y	Y	Y
Contaminants:	Total Copper	mg/kg	11.0	Y	Y	Y	Y	Y	Y
	Total Nickel	mg/kg	17.6	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	18.8						
Analysis:	Available Calcium	mg/l	2051.4						
	Conductivity	uS/cm	2087	Y					
Compliance:				N	N	N	Y	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by:

Myles Nicholson

Date: 06/11/2020

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



Analytical Report

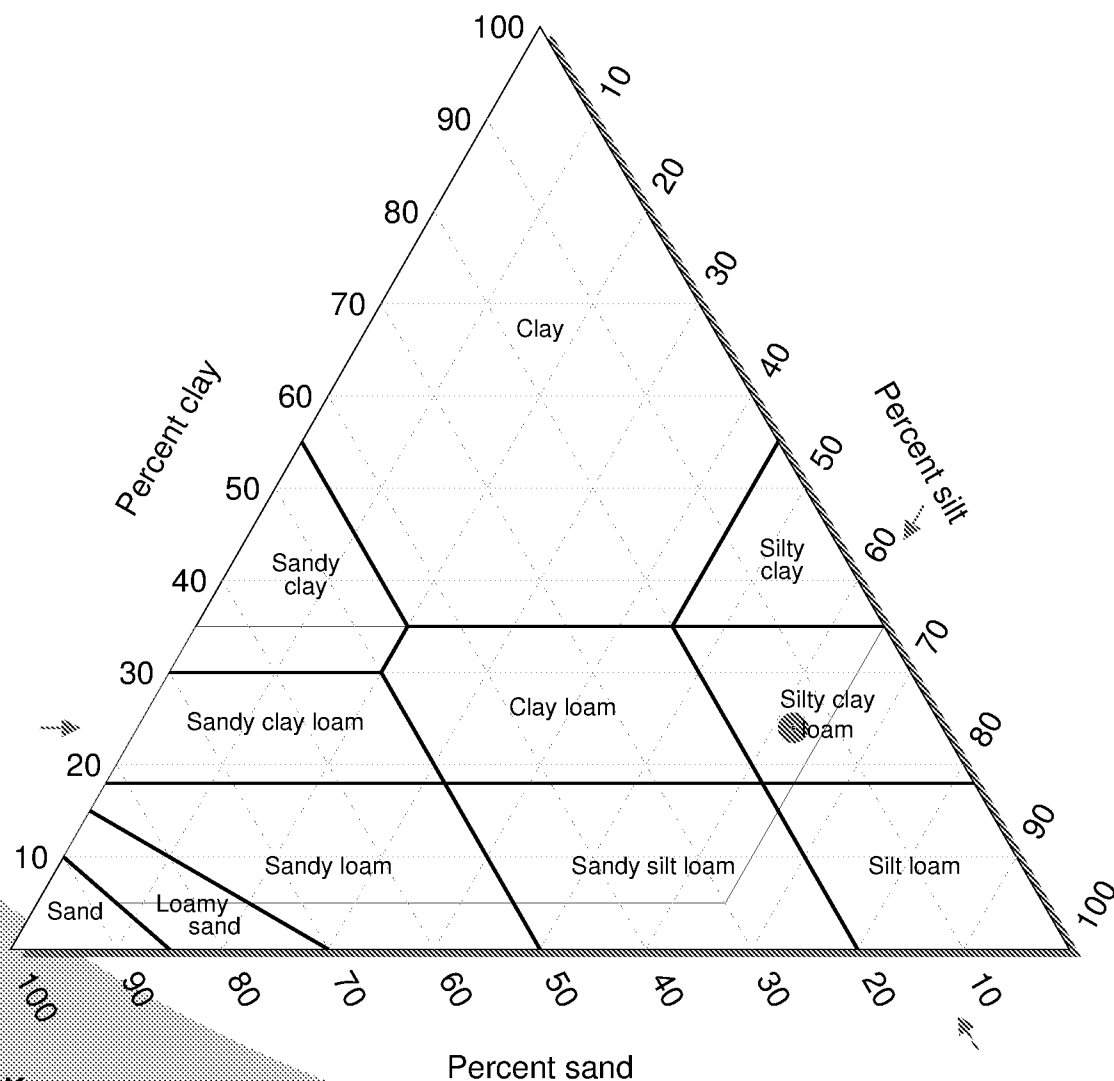
Client: EARTHCARE TECHNICAL LTD
(K469) MANOR FARM
CHALTON
WATERLOOVILLE
HANTS
PO8 0BG

Originator: SALT BOX
BOGNOR REGIS
SOIL

Lab ID: 28863 - 495532
Sample ID: STORAGE FLD 28 10
Sample Weight: 1209g

Date Received: 30/10/2020
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Fig. 1. Textural Class: Silty Clay Loam (compliant)



Key



Area within which texture of topsoil is required to fall.



Originator: SALT BOX
BOGNOR REGIS
SOIL

Date Received: 30/10/2020
Date Reported: 06/11/2020

		Unit	Result
Additional Analysis:	Total Lead	mg/kg	13.8
	Total Cadmium	mg/kg	0.22
	Total Mercury	mg/kg	<0.2
	Total Chromium	mg/kg	24.7

Released by: Myles Nicholson

Date: 06/11/2020



Certificate of Analysis

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CHALTON
WATERLOOVILLE
HANTS
PO8 0BG

Originator: SALT BOX
BOGNOR REGIS
SOIL

Lab ID: 28863 - 495533
Sample ID: SOILHEAP 28 10
Sample Weight: 921g

Date Received: 30/10/2020
Date Reported: 06/11/2020

BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Fails BS 3882

				Compliant with range (Y/N)					
				Multi-P	Acid	Calc	Low-F	Low-F	Low-F
								Acid	Calc
Texture:	Clay	% w/w	18						
	Silt	% w/w	67						
	Sand	% w/w	15						
	Textural Class		Silt Loam	N	N	N	N	N	N
<i>See area of permitted soil textural classes in Fig. 1.</i>									
Organic Matter:		% w/w	2.7	N	N	N	Y	Y	Y
Coarse	>2 mm	% w/w	1.4	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:			7.3	Y	N	N	Y	N	N
Carbonate:		% w/w	<1			N			N
Available	Nitrogen	% w/w	0.119	N	N	N			
Plant	Phosphorus	mg/l	32.4 (3)*	Y	Y	Y	N	N	N
Nutrients:	Potassium	mg/l	182.5 (2+)*	Y	Y	Y			
	Magnesium	mg/l	78.7 (2)*	Y	Y	Y			
Carbon:Nitrogen Ratio:		:1	13.2	Y	Y	Y	Y	Y	Y
Exchangeable Sodium Percentage:		%	1.3						
Phytotoxic	Total Zinc	mg/kg	45.9	Y	Y	Y	Y	Y	Y
Contaminants:	Total Copper	mg/kg	12.0	Y	Y	Y	Y	Y	Y
	Total Nickel	mg/kg	16.0	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	27.3						
Analysis:	Available Calcium	mg/l	1591.0						
	Conductivity	uS/cm	2145	Y					
Compliance:				N	N	N	N	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by:

Myles Nicholson

Date: 06/11/2020

DECLARATION:

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

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



Analytical Report

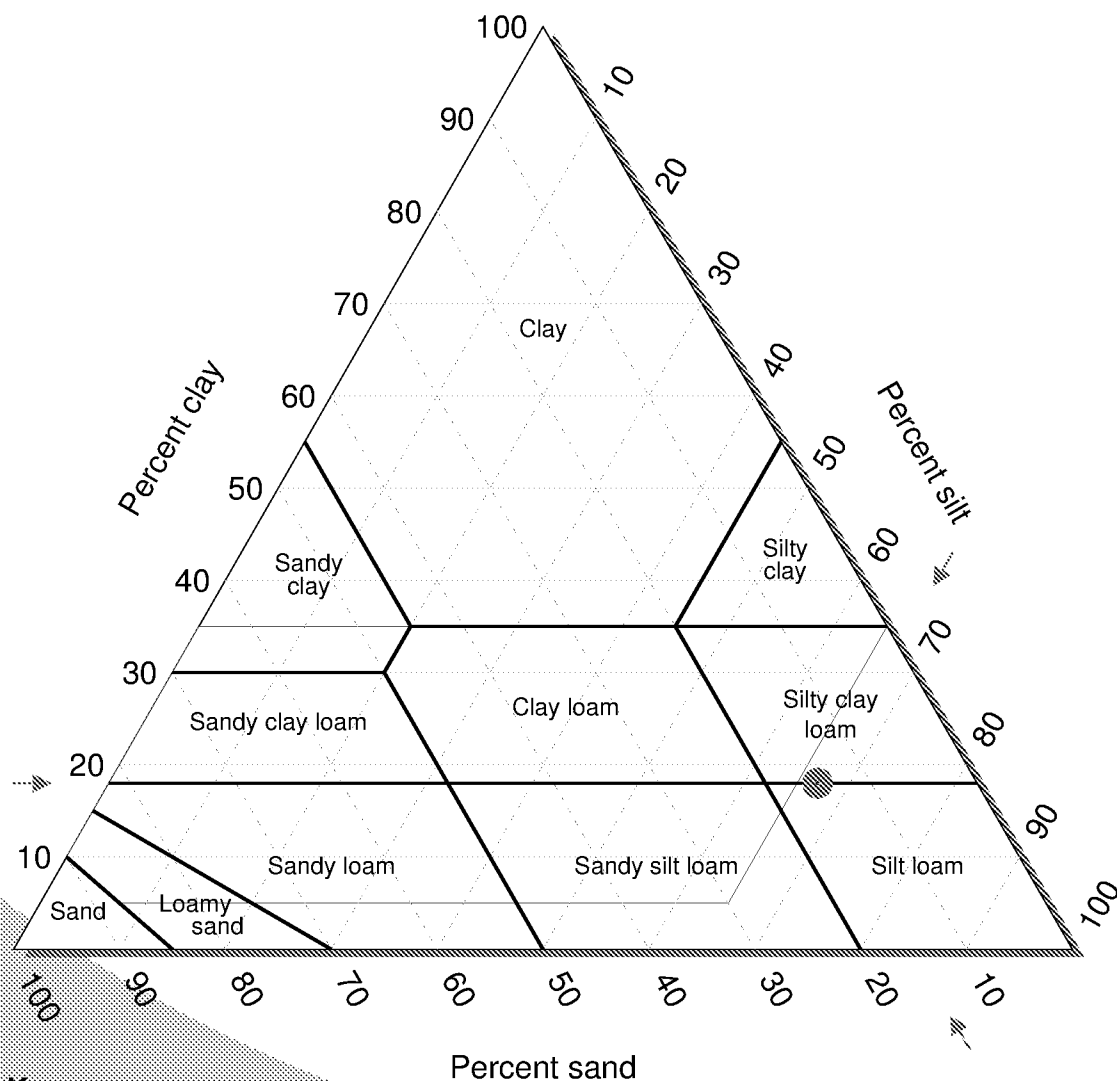
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PO8 0BG

Originator: SALT BOX
BOGNOR REGIS
SOIL

Lab ID: 28863 - 495533
Sample ID: SOILHEAP 28 10
Sample Weight: 921g

Date Received: 30/10/2020
Date Reported: 06/11/2020

Fig. 1. Textural Class: Silt Loam (non-compliant)



Key



Area within which texture of topsoil is required to fall.



Analytical Report

Client: EARTHCARE TECHNICAL LTD
(K469) MANOR FARM
CHALTON
WATERLOOVILLE
HANTS
PO8 0BG

Originator: SALT BOX
BOGNOR REGIS
SOIL

Lab ID: 28863 - 495533
Sample ID: SOILHEAP 28 10
Sample Weight: 921g

Date Received: 30/10/2020
Date Reported: 06/11/2020

Additional Analysis:		Unit	Result
	Total Lead	mg/kg	18.8
	Total Cadmium	mg/kg	0.30
	Total Mercury	mg/kg	<0.2
	Total Chromium	mg/kg	23.7

Results are expressed on a dry matter basis unless otherwise specified.

Released by: Myles Nicholson

Date: 06/11/2020