

Our ref: D40178/SS

27th May 2021

Ashwood Homes
Gateway Business Park
1 Goodison Road
Spalding
Lincolnshire
PE12 6FY

For the attention of Mr B. Gibson

Dear Barrie

Re: Supplementary Contamination Assessment – Locksmill Farm, Spalding

Following the recent completion of the supplementary trial pitting / soil sampling works at the above site, we are now pleased to report as follows.

THE SITE & PROJECT UNDERSTANDING

The site (known as Locksmill Farm) essentially comprised, until recently, two open fields with dilapidated farm buildings in the northwest of the site. At the time of our most recent visit (May 2021), the site generally comprised open ground following site clearance works, including the removal of trees, a partial topsoil strip and the demolition / removal of the former buildings in the northern part of the site.

Locksmill Farm is proposed to be developed for a low-rise residential end-use.

PROJECT BACKGROUND

The following ground investigation report has previously been produced for the site:

- Geo-Matters report entitled '*Phase I & II Geo-Environmental Investigation – Site off Cowbit Road, Spalding*', reference GML19195/2/0, produced for Minster Property Group Ltd, dated September 2019.

The above report, which should be read in conjunction with this report, involved the advancement eight window sample boreholes and five hand dug trial pits with a view to providing an initial assessment of the site from a geotechnical and environmental perspective.

The Geo-Matters report concludes that '*Localised small-scale remediation works to protect human health are considered necessary subject to the approval of the Local Authority / NHBC. This relates to the elevated heavy metals (Lead) and TPH within made ground (at 0.20m below existing ground level) at WS01. Capping and / or removal of shallow soils (provisionally recommended to be within 600mm of the finished surface levels) will be required for garden / soft landscaped areas where these materials remain in situ. Delineation testing is recommended to confirm the extent of contaminated made ground in this area*'.

Based on the above, Ashwood Homes opted to remove from site the lead / TPH impacted soils in the location of WS01, and instructed GeoDyne to undertake confirmatory sampling at the limit of the open excavation for validation purposes. These validation works were reported in our letter report dated 29th March 2021.

Subsequent to the issuing of the foregoing validation report, GeoDyne has been made aware of the following comments made by the Environmental Protection Officer (Sue Armour) at South Holland District Council in relation to the earlier Geo-Matters report:

'The site investigation has identified that remediation is required, but I do not consider that the site is adequately characterised at this time. Zoning of the site would assist in defining any further site investigation works to be undertaken. There was very limited sampling and testing in the northern part of the site. No field logs for the hand dug pits were presented, so the soil sampled and tested is not clear. Only two samples of the made ground soils were analysed. The use of statistics on such a limited data set is not appropriate. Further characterisation of the northern part of the site, including areas of made ground soil, chemical storage and the above ground fuel tank, should be undertaken prior to the formulation of a remediation method statement.'

In light of these comments, Ashwood Homes have commissioned GeoDyne to undertake a supplementary trial pitting / soil sampling exercise across the northern part of the site to enable further assessment and characterisation of the soils encountered in the northern portion of the site.

SAMPLING WORKS

Introduction

Following our review of the Geo-Matters report, and in line with the Local Authority comments, our supplementary works were targeted to the northern areas of the site where former farm buildings (principally storage sheds and greenhouses) were previously located prior to their removal from site by the demolition contractor. The Geo-Matters report comments that these structures may incorporate asbestos containing materials (ACMs) and locally contained plastic materials, paint tins, gas canisters and other storage containers (unspecified), at the time of their site works in August 2019. Furthermore, the Geo-Matters report also briefly discusses an ex-situ small disused above ground fuel storage tank (AST) within one of the now demolished farm buildings and this is considered in more detail in the GeoDyne validation report dated March 2021.

Exploratory holes were therefore advanced to specifically target the locations of the former structures and highlighted features and also to provide general site coverage across the northern area, where possible and taking account of buried services.

Table 1 summarises the reasoning behind the exploratory hole positions based on the features identified in the Geo-Matters report.

TABLE 1 – REASONING FOR EXPLORATORY HOLE LOCATION	
Exploratory Hole Reference	Reasoning Behind Location
TP1B to TP8B	General site coverage avoiding known utilities.
TP1B & TP2B	Targeted to the former 'overgrown' / 'scrubland' area which previously contained 'small quantities of inert waste found at the surface' / 'metal containers, concrete fragments, broken crates and plastic waste'
TP3B & TP4B	Targeted to the location of the former storage sheds
TP5B	Targeted closest to the location of the former very small above ground fuel storage tank
TP6B & TP7B	Targeted to the location of the former dilapidated greenhouses
TP8B	Targeted to the location of the former possible 'general purpose workshops' in the north-western portion
Key	
TP – Trial Pit	

Our supplementary site works were undertaken on 7th May 2021, utilising a mechanical tracked excavator provided by the Client.

Trial Pits

A total of eight supplementary trial pits (TP1B to TP8B) were excavated at the site to depths of between 2.95m and 3.20m below existing ground level (begl).

The approximate locations of the trial pits are shown on the plan presented in Appendix I (Figure No. D40178/01C). The exploratory hole logs are presented in Appendix II of this report.

Ground Conditions

Made Ground was encountered in each of the trial pits excavated, to shallow depths of between 0.25m and 0.60m begl. The Made Ground typically comprised firm silty clay or clayey silt, and was locally gravelly and sandy. The Made Ground often included minor inclusions of anthropogenic materials (generally brick and concrete), and locally contained small pockets of topsoil. A plan showing approximate depths to the base of Made Ground at each trial pit location is presented in Appendix III (Figure No. D40178/02C).

The underlying Natural Strata generally comprised interbedded soft to firm clayey SILT and silty CLAY. These strata tended to become progressively softer with increased depth.

The Natural Strata encountered are considered to be typical of the Tidal Flat Deposits which are indicated to underlie the site on the reviewed geological mapping.

Visual & Olfactory Evidence of Soil Contamination

We would note that no obvious visual or olfactory evidence of significant soil contamination was identified during the course of the site works.

Water

Slight water seepages were encountered in half (4No.) of the trial pits during their advancement, from depths in excess of 1.90m begl.

Stability

The sides of the trial pits remained generally stable during their excavation and for the short period of time they remained open following completion. Collapsing of pit walls was only recorded in TP4B, from depths of below 1.80m begl, after the pit had remained open for two minutes.

Plates

Views of the open trial pits during their excavation are included in the plates (P1B to P8B), presented in Appendix IV of this report.

Sample Recovery

The ground conditions encountered during our supplementary intrusive works revealed the presence of two distinct types of material, i) Made Ground, and ii) the underlying Natural Strata.

Representative samples of both soil types were obtained during our works, and subjected to chemical analysis for a suite of contaminants deemed appropriate based on our review of the Geo-Matters report.

On Site Photo-Ionisation Detector Screening

It was considered appropriate to undertake Photo-Ionisation Detector (PID) analysis of the recovered samples.

Following the intrusive works, selected soil samples were subjected to semi-quantitative analysis using a portable MiniRAE 2000 Photo Ionisation Detector (PID). The MiniRAE 2000 is a robust, portable PID used to investigate the potential presence of Volatile Organic Compounds (VOCs) and hydrocarbon vapours. Whilst the PID does not quantitatively discriminate between discrete VOCs, notable PID readings can be taken to be an indicator of soil impaction.

The selected soil samples were placed in sealed containers, agitated, and the headspace in each container aspirated into the PID for analysis. Screening revealed values (ppm) below 10ppm in all of the soil samples obtained from the site, indicating a general absence of significant volatile hydrocarbon impaction.

LABORATORY TESTING

Contamination Assessment

Generic Assessment Criteria (GAC) for the assessment of soils with respect to human health risk assessment have been produced by Defra, comprising Category 4 Screening Levels (C4SLs) and LQM/CIEH comprising Suitable 4 Use Levels (S4ULs), detailed in Nathanail, C.P., McCaffrey, C. Gillett, A.G. Ogden, R.C. and Nathanail, J.F 2015. *'The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. "Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved."*

Based on our understanding of current good practice within the contaminated land field, we have adopted the S4UL values (representing a compatible approach to risk assessments undertaken since the initial derivation of the CLEA model, and based on an established and justifiable methodology) as GAC values for human health for the assessment of the laboratory analysis results in relation to the tested soils. In the absence of a suitable S4UL value (such as lead), reference has been made to the relevant C4SL, and these have been adopted where considered justifiable and as appropriate.

In consideration of the available generic land uses utilised in the derivation of the adopted screening criteria, we have adopted a residential end-use with plant uptake scenario for the purposes of our assessments.

The following environmental soil testing was carried out on visually representative samples recovered from the trial pits (TP1B to TP8B), based on the pre-demolition description of the northern area of the site within the Geo-Matters report:

- 9No. Standard contamination suites (including metals, speciated PAH and TOC).
- 3No. Speciated Total Petroleum Hydrocarbon (TPH CWG) suites (aliphatic/aromatic split, BTEX and MTBE).
- 3No. Volatile Organic Content (VOC) suites.
- 6No. Asbestos Screens.

All laboratory soil test results are included in Appendix V of this report.

For assessment purposes, we have adopted a policy whereby determinands within the dataset are individually compared to the relevant screening value (i.e. individual GAC) in the first instance. Where determinands within the dataset are less than the appropriate screening value, the determinand is considered to be present at an acceptable concentration and no further assessment is required.

For initial assessment purposes, we have collated the soil test results into two datasets, namely Made Ground and the underlying Natural Strata, for individual comparison of the reported determinand concentrations against appropriate Tier 1 GACs.

The results of the contamination assessment for the Made Ground are summarised in Table 2. Please note that only those determinands elevated above the limit of detection of the laboratory method of analysis have been included in our assessment.

TABLE 2 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT (RESIDENTIAL WITH PLANT UPTAKE END-USE – MADE GROUND)						
Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals						
Arsenic	6	2 – 6	37 S4UL	37	NA	No
Chromium III	6	5 – 27	910 S4UL	-	NA	No
Copper	6	2 – 10	2400 S4UL	-	NA	No
Lead	6	3 – 10	200 C4SL	200	NA	No
Nickel	6	6 – 21	130 S4UL	-	NA	No
Mercury	6	<0.17 – 0.40	40 S4UL	-	NA	No
Zinc	6	15 – 51	3700 S4UL	-	NA	No
Speciated TPHs						
C16-C21 Aliphatic	3	<1 & 1	65000 S4UL	-	NA	No
C21-C35 Aliphatic	3	3 – 6	65000 S4UL	-	NA	No
C12-C16 Aromatic	3	<1 & 1	140 S4UL	-	NA	No
C16-C21 Aromatic	3	<1 – 3	260 S4UL	-	NA	No
C21-C35 Aromatic	3	3 & 4	1100 S4UL	-	NA	No
Key S4UL – CIEH/LQM Suitability 4 Use Levels (2015). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved. C4SL – values for Arsenic and Lead taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use. # – See comments below table (where relevant). NA – UCL not applicable as all individual concentrations are present at concentrations individually below the GAC.						

The data in Table 2 may be summarised as follows:

All of the determinands assessed were present at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

Asbestos Screening

Six samples of the Made Ground were analysed for asbestos (for any bulk fragments and / or fibres) by the laboratory as part of the contamination assessment. None of the samples analysed by the laboratory revealed the presence of asbestos.

The results of the contamination assessment for the Natural Strata are summarised in Table 3 on the next page. Please note that only those determinands elevated above the limit of detection of the laboratory method of analysis have been included in our assessment.

**TABLE 3 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMENT
(RESIDENTIAL WITH PLANT UPTAKE END-USE – NATURAL STRATA)**

Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	UCL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals						
Arsenic	3	3 & 6	37 S4UL	37	NA	No
Chromium III	3	11 – 14	910 S4UL	-	NA	No
Copper	3	3 – 5	2400 S4UL	-	NA	No
Lead	3	5 & 6	200 C4SL	200	NA	No
Nickel	3	9 – 12	130 S4UL	-	NA	No
Mercury	3	0.26 – 0.38	40 S4UL	-	NA	No
Zinc	3	25 – 29	3700 S4UL	-	NA	No

Key

S4UL – CIEH/LQM Suitable 4 Use Levels (2015). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved.

C4SL – values for Arsenic and Lead taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use.

– See comments below table (where relevant).

NA – UCL not applicable as all individual concentrations are present at concentrations individually below the GAC.

The data in Table 3 may be summarised as follows:

All of the determinands assessed were present at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

Other Chemical Analysis

In addition to the above, further chemical contamination testing was carried out with the aim of satisfying the requirements of Anglian Water in relation to the specification of appropriate water supply pipes for the site, as detailed within our letter dated 29th March 2021 (Ref. D40178/SS). This involved the laboratory testing of 5No. samples of Made Ground and Natural soils along the line of the proposed road across the site (including 2No. within the northern area) for the following determinands:

- 5No. Standard contamination suites (metals and pH).
- 5No. Total Phenols tests.
- 5No. Speciated TPH tests (aliphatic/aromatic split, BTEX and MTBE).
- 5No. VOC suites.
- 5No. Semi-Volatile Organic Compounds (SVOCs) including Speciated PAHs, Cresols and Chlorinated Phenols.

The results of the above testing have been re-examined in relation to Tier 1 GAC for human health protection purposes as part of this assessment. All of the determinands assessed were present at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a residential with plant uptake end-use.

CONCLUSIONS

Contamination testing was carried out on selected samples of the Made Ground and the underlying Natural Strata. On the basis of the chemical contamination assessment undertaken by GeoDyne, the soils may be considered to be uncontaminated for the proposed residential with plant uptake end-use. There are considered to be no significant risks posed to Controlled Waters by the findings of the laboratory analysis undertaken.

Based on the results of the soil sampling detailed herein, it is considered that the localised lead / TPH impacted soils, determined by others (in one location in the north-western portion), does indeed appear to constitute a 'hotspot' (i.e. these impacted soils have not been found to be pervasive across the wider site area). On this basis, the '*Localised small-scale remediation works to protect human health ... relating ... to the elevated heavy metals (Lead) and TPH within made ground (at 0.20m below existing ground level) at WS01*' (as recommended by Geo-Matters) appears to be a reasonable approach with regard to a remediation strategy for the site. It is proposed that a Remediation Method Statement (RMS) is produced to document and confirm the procedures adopted in relation to the remediation works undertaken, and this will be issued under separate cover.

COMMENTS

GeoDyne Limited has prepared this report for the sole use and reliance of the Client, Ashwood Homes, in accordance with our Standard Conditions and Limitations (included in Appendix VI). This report may not be used or relied upon by any unauthorised third party without the explicit written agreement of GeoDyne Limited.

We would recommend that this report is submitted to the Environmental Health Officer (EHO) for comment / approval, prior to development.

We trust that the foregoing is suitable for your current requirements. However, should you have any immediate comments or queries, please do not hesitate to contact us.

Yours sincerely

For and on the behalf of GeoDyne Limited



Stephen Sellers
Senior Geo-Environmental Engineer

Encs	Appendix I	Trial Pit Location Plan (Figure No. D40178/01C)
	Appendix II	Trial Pit Logs (TP1B to TP8B)
	Appendix III	Plan Showing Depth to Base of Made Ground (Figure No. D40178/02C)
	Appendix IV	Plates (P1B to PB8B)
	Appendix V	Laboratory Soil Test Results
	Appendix VI	Conditions & Limitations

APPENDIX I

**Trial Pit Location Plan
(Figure No. D40178/01C)**



KEY

-  Trial Pit Location (TP)
-  Greenfield Area of Site
-  Area of Former Farm Buildings

Note: All locations are approximate

REPRODUCED FROM THE ANDREW M WRIGHT LTD DWG TITLED 'PROPOSED SITE LAYOUT', DWG NO. PD02, DATED SEPTEMBER 2019; USED, EDITED AND REPRODUCED WITH THE PERMISSION OF THE CLIENT

Project No.	D40178	Title	Trial Pit Location Plan	Drawn	SJ	 GeoDyne
Client	Ashwood Homes			Checked	SS	
Project	Locksmill Farm Spalding	Date Drawn	24/05/2021	Approved	PK	
		Scale	NTS		Figure No. D40178/01C	
		Revision				



APPENDIX II

**Trial Pit Logs
(TP1B to TP8B)**

TP1B



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP2B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey sandy clayey slightly gravelly silt with some broken brick and roots. Gravel is fine to coarse and predominantly subangular (MADE GROUND) ...becoming sandy with increasing depth		0.40	J3	J			
Soft to firm grey-brown very silty CLAY (TIDAL FLAT DEPOSITS) ...becoming soft and less silty below 1.10m		0.60 0.65	J4	J			
Soft grey locally slightly clayey SILT (TIDAL FLAT DEPOSITS)		1.95					
End of Trial Pit at 3.05m		3.05					

Remarks:

- Sides generally stable.
- Slight water seepages encountered below 2.05m.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project: Locksmill Farm, Spalding			Client: Ashwood Homes	
Logged: SS	Checked: SS	Field Book Ref: SS/16	Plant: Hyundai 1400 HXLX Excavator	Drawing No. TP2B
Date: 07/05/2021	Approved: PK		Scale: 1:25	



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP3B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Loose to medium dense grey-brown sandy fine to coarse subrounded to subangular gravel with some broken brick, concrete fragments and small pockets of clay (MADE GROUND)		0.15	J5	J			
Firm grey-brown clayey SILT (TIDAL FLAT DEPOSITS)		0.40 0.45	J6	J			
...becoming soft below 1.15m							
Soft grey sandy SILT (TIDAL FLAT DEPOSITS)		1.80					
End of Trial Pit at 2.95m		2.95					

Remarks:

- Sides generally stable.
- Slight water seepages encountered below 1.90m.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project: Locksmill Farm, Spalding			Client: Ashwood Homes	
Logged: SS	Checked: SS	Field Book Ref: SS/16	Plant: Hyundai 1400 HXLC Excavator	Drawing No. TP3B
Date: 07/05/2021	Approved: PK		Scale: 1:25	



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP4B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Loose beige very silty fine to coarse subangular gravel with occasional cobbles (MADE GROUND)		0.10 0.20	J7	J			
Loose to medium dense grey-brown very silty slightly gravelly sand with some broken brick and occasional broken concrete. Gravel is fine to coarse subrounded to angular (MADE GROUND)		0.50 0.55	J8	J			
Soft to firm grey-brown very silty CLAY (TIDAL FLAT DEPOSITS)							
...becoming soft with increasing depth							
Soft dark grey clayey locally slightly sandy SILT (TIDAL FLAT DEPOSITS)		1.80					
End of Trial Pit at 3.10m		3.10					

Remarks:

1. Collapsing of trial pit walls below 1.80m after pit had remained open for two minutes.
2. Slight water seepages encountered below 2.00m.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project: Locksmill Farm, Spalding			Client: Ashwood Homes	
Logged: SS	Checked: SS	Field Book Ref: SS/16	Plant: Hyundai 1400 HXL C Excavator	Drawing No. TP4B
Date: 07/05/2021	Approved: PK		Scale: 1:25	



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP5B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey very silty sandy clay with some roots, broken brick and occasional small pockets of gravelly topsoil (MADE GROUND)		0.35	J9	J			
Soft grey-brown very clayey SILT (TIDAL FLAT DEPOSITS)		0.40					
...becoming locally very soft and less clayey with increasing depth		1.00	J10	J			
Soft grey slightly sandy SILT (TIDAL FLAT DEPOSITS)		2.10					
End of Trial Pit at 3.05m		3.05					

Remarks:

- Sides generally stable.
- No water seepages encountered.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project:

Locksmill Farm, Spalding

Client:

Ashwood Homes

Logged:

SS

Checked:

SS

Field Book Ref:

SS/16

Plant:

Hyundai 1400
HXLC Excavator

Scale:

1:25

Drawing No.

TP5B

Date:

07/05/2021

Approved:

PK



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP6B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey-brown slightly gravelly sandy clayey silt with some roots and occasional concrete fragments. Gravel is fine to coarse and predominantly subangular (MADE GROUND)		0.30	J11	J			
Firm grey-brown SILT (TIDAL FLAT DEPOSITS)		0.45	J12	J			
0.50							
...becoming soft and very clayey below 1.15							
...grey and slightly sandy below 2.10m							
End of Trial Pit at 3.00m		3.00					

Remarks:

- Sides generally stable.
- No water seepages encountered.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project: Locksmill Farm, Spalding			Client: Ashwood Homes	
Logged: SS	Checked: SS	Field Book Ref: SS/16	Plant: Hyundai 1400 HXLX Excavator	Drawing No. TP6B
Date: 07/05/2021	Approved: PK		Scale: 1:25	

TP7B



9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

TP8B

Project No: D40178

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm grey-brown sandy gravelly silt with occasional broken brick. Gravel is fine to coarse and rounded to angular (MADE GROUND)		0.10	J15	J			
Soft to firm grey-brown very clayey SILT (TIDAL FLAT DEPOSITS)		0.30					
		0.50	J16	J			
		1.10					
Soft grey silty CLAY (TIDAL FLAT DEPOSITS)							
...becoming very soft with increasing depth							
End of Trial Pit at 3.00m		3.00					

Remarks:

- Sides generally stable.
- No water seepages encountered.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample = Water Strike (m) = Steady Water Level (m)

Project:

Locksmill Farm, Spalding

Client:

Ashwood Homes

Logged:

SS

Checked:

SS

Field Book Ref:

SS/16

Plant:

Hyundai 1400
HXLX Excavator

Scale:

1:25

Drawing No.

TP8B

Date:

07/05/2021

Approved:

PK

APPENDIX III

**Plan Showing Depth to Base of Made Ground
(Figure No. D40178/02C)**



KEY

 Trial Pit Location (TP)

0.25m Depth to Base of Made Ground (m begl)

Note: All locations are approximate

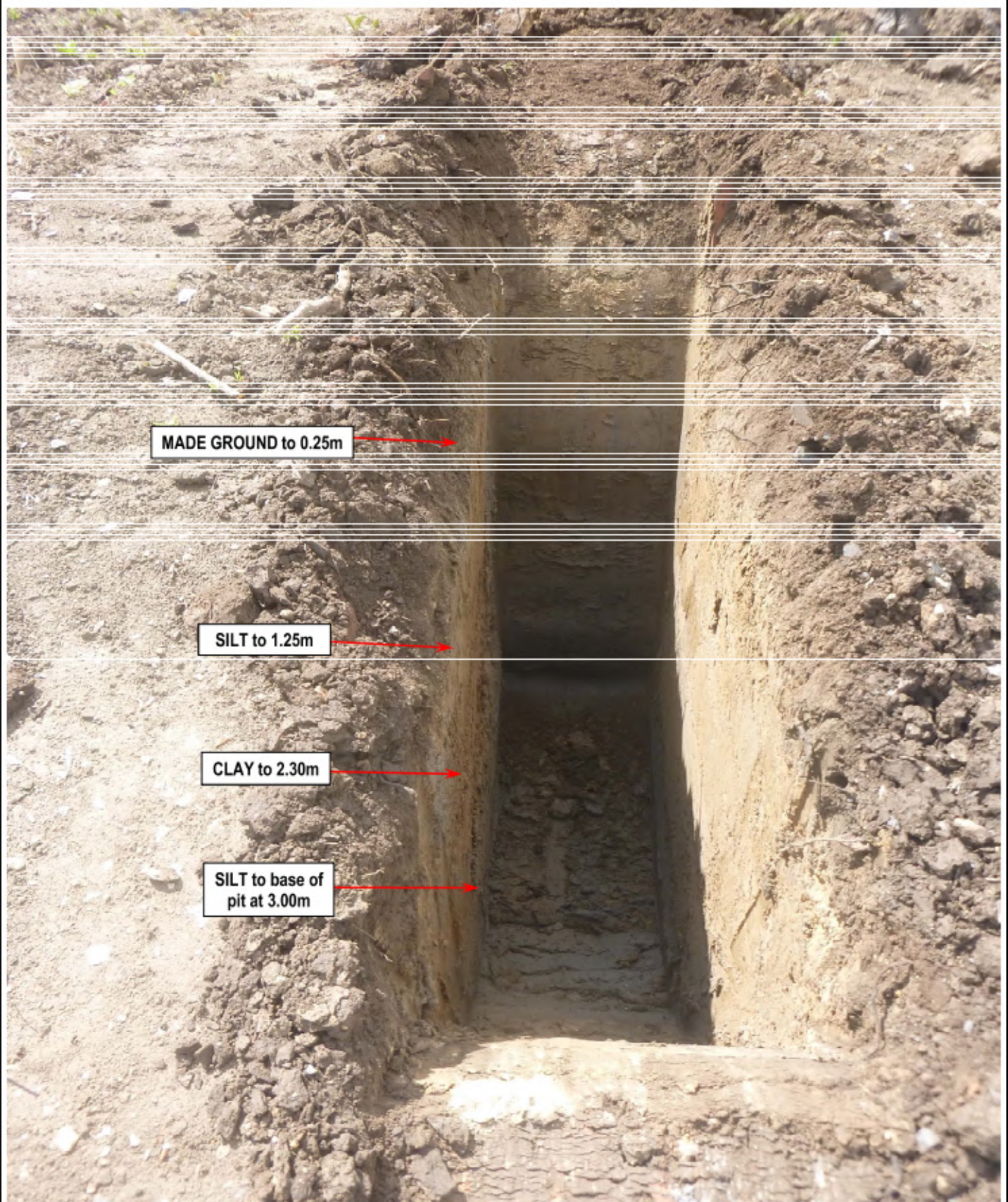
REPRODUCED FROM THE ANDREW M WRIGHT LTD DWG TITLED 'PROPOSED SITE LAYOUT', DWG NO. PD02, DATED SEPTEMBER 2019; USED, EDITED AND REPRODUCED WITH THE PERMISSION OF THE CLIENT

Project No.	D40178	Title	Plan Showing Depth to Base of Made Ground	Drawn	SJ
Client	Ashwood Homes			Checked	SS
Project	Locksmill Farm Spalding	Date Drawn	24/05/2021	Approved	PK
		Scale	NTS	Figure No.	D40178/01C
		Revision			

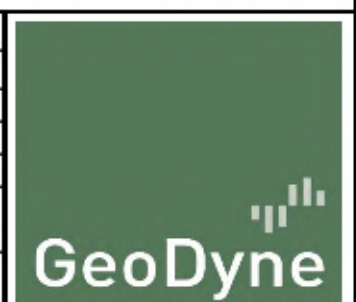
GeoDyne

APPENDIX IV

**Plates
(P1B to P8B)**



Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP1B - completed excavation	Rev.	
		Plate No.	1B

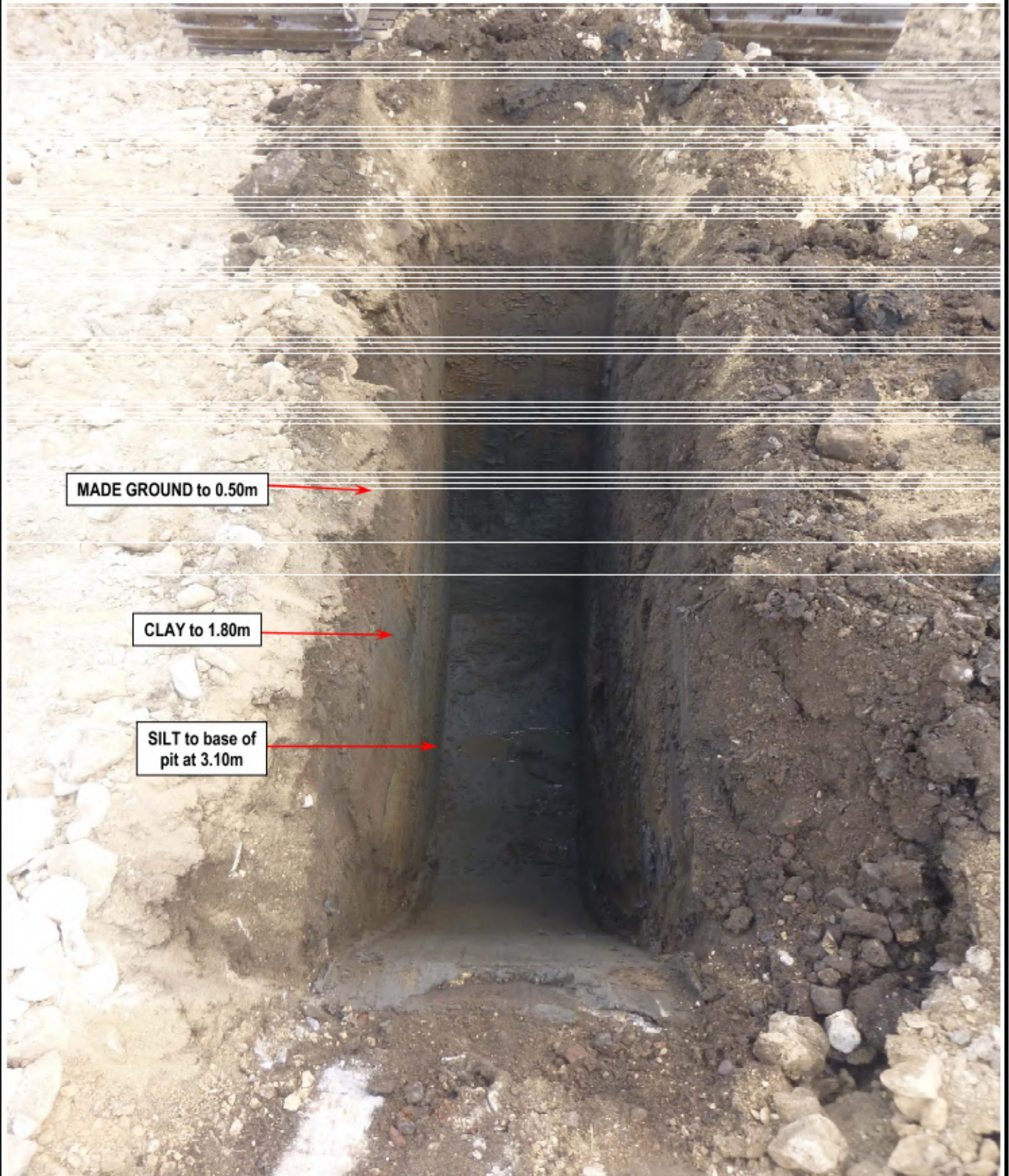




Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP2B - completed excavation	Rev.	
		Plate No.	2B



Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP3B - completed excavation	Rev.	
		Plate No.	3B



Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP4B - completed excavation	Rev.	
		Plate No.	4B

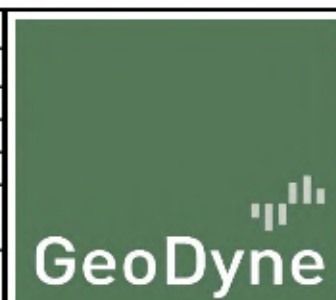




Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP5B - completed excavation	Rev.	
		Plate No.	5B



Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP6B - completed excavation	Rev.	
		Plate No.	6B

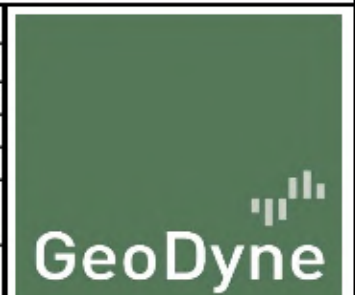




Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP7B - completed excavation	Rev.	
		Plate No.	7B



Project No.	D40178	Drawn	SJ
Client	Ashwood Homes	Checked	SS
		Approved	PK
Project	Locksmill Farm, Spalding	Scale	NTS
		Date Drawn	24/05/2021
Title	TP8B - completed excavation	Rev.	
		Plate No.	8B



APPENDIX V

Laboratory Soil Test Results

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/05297
Issue Number: 1
Date: 21 May, 2021

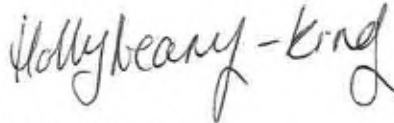
Client: GeoDyne (Derby)
9 Brunel Parkway
Pride Park
Derby
Derbyshire
UK
DE24 8HR

Project Manager: Steve Sellers
Project Name: Locksmill Farm, Spalding
Project Ref: D40178
Order No: D40178/SS
Date Samples Received: 17/05/21
Date Instructions Received: 17/05/21
Date Analysis Completed: 21/05/21

Prepared by:


Melanie Marshall
Laboratory Coordinator

Approved by:


Holly Neary-King
Client Services Supervisor

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	% w/w	0.1	A-T-044
pH ₀ ^{MS}	8.65	8.78	8.80	8.68	-	8.56	-	pH	0.01	A-T-031e
Total Organic Carbon ₀ ^{MS}	0.49	0.81	0.87	0.59	-	0.50	-	% w/w	0.03	A-T-032e
Arsenic ₀ ^{MS}	2	4	3	6	-	3	-	mg/kg	1	A-T-024e
Cadmium ₀ ^{MS}	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	mg/kg	0.5	A-T-024e
Copper ₀ ^{MS}	3	5	4	4	-	5	-	mg/kg	1	A-T-024e
Chromium ₀ ^{MS}	6	14	13	12	-	14	-	mg/kg	1	A-T-024e
Chromium (hexavalent) ₀	<1	<1	<1	<1	-	<1	-	mg/kg	1	A-T-040e
Chromium (trivalent)	6	14	13	12	-	14	-	mg/kg	1	Calc
Lead ₀ ^{MS}	4	7	5	5	-	6	-	mg/kg	1	A-T-024e
Mercury ₀	<0.17	0.29	0.38	0.40	-	0.27	-	mg/kg	0.17	A-T-024e
Nickel ₀ ^{MS}	7	12	11	10	-	12	-	mg/kg	1	A-T-024e
Selenium ₀ ^{MS}	<1	<1	<1	<1	-	<1	-	mg/kg	1	A-T-024e
Zinc ₀ ^{MS}	19	30	27	25	-	29	-	mg/kg	5	A-T-024e

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [†]	-	NAD	-	NAD	NAD	-	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? [‡]	-	N/A	-	N/A	N/A	-	N/A			A-T-045

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
PAH-16MS										
Acenaphthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Acenaphthylene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Benzo(a)anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Benzo(a)pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Benzo(b)fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Benzo(ghi)perylene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Benzo(k)fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Chrysene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Dibenzo(ah)anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Fluorene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Indeno(123-cd)pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Naphthalene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Phenanthrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e
Total PAH-16MS _A ^{MS}	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	0.1	A-T-619e

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
VOC										
Dichlorodifluoromethane _A	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Chloromethane _A	<10	-	-	-	-	-	<10	µg/kg	10	A-T-006a
Vinyl Chloride (Chloroethene) _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Bromomethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Chloroethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Trichlorofluoromethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1-Dichloroethene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Carbon Disulphide _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Dichloromethane _A	<5	-	-	-	-	-	<5	µg/kg	5	A-T-006a
trans 1,2-Dichloroethene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1-Dichloroethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
cis 1,2-Dichloroethene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
2,2-Dichloropropane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Bromochloromethane _A ^g	<5	-	-	-	-	-	<5	µg/kg	5	A-T-006a
Chloroform _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1,1-Trichloroethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1-Dichloropropene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Carbon Tetrachloride _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2-Dichloroethane _A ^g	<2	-	-	-	-	-	<2	µg/kg	2	A-T-006a
Benzene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Trichloroethene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2-Dichloropropane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Dibromomethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Bromodichloromethane _A ^g	<10	-	-	-	-	-	<10	µg/kg	10	A-T-006a
cis 1,3-Dichloropropene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Toluene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
trans 1,3-Dichloropropene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1,2-Trichloroethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,3-Dichloropropane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Tetrachloroethene _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Dibromochloromethane _A ^g	<3	-	-	-	-	-	<3	µg/kg	3	A-T-006a
1,2-Dibromoethane _A ^g	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
Chlorobenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1,1,2-Tetrachloroethane _A	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Ethylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
m & p Xylene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
o-Xylene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Styrene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Bromoform _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Isopropylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,1,2,2-Tetrachloroethane _A	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2,3-Trichloropropane _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
Bromobenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
n-Propylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
2-Chlorotoluene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,3,5-Trimethylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
4-Chlorotoluene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
tert-Butylbenzene _A [§]	<2	-	-	-	-	-	<2	µg/kg	2	A-T-006a
1,2,4-Trimethylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
sec-Butylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
4-Isopropyltoluene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,3-Dichlorobenzene _A	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,4-Dichlorobenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
n-Butylbenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2-Dichlorobenzene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2-Dibromo-3-chloropropane (DCBP) _A	<2	-	-	-	-	-	<2	µg/kg	2	A-T-006a
1,2,4-Trichlorobenzene _A	<3	-	-	-	-	-	<3	µg/kg	3	A-T-006a
Hexachlorobutadiene _A [§]	<1	-	-	-	-	-	<1	µg/kg	1	A-T-006a
1,2,3-Trichlorobenzene _A	<3	-	-	-	-	-	<3	µg/kg	3	A-T-006a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/1	21/05297/3	21/05297/4	21/05297/5	21/05297/7	21/05297/8	21/05297/9	Units	Limit of Detection	Method ref
Client Sample No	J1	J3	J4	J5	J7	J8	J9			
Client Sample ID	TP1B	TP2B	TP2B	TP3B	TP4B	TP4B	TP5B			
Depth to Top	0.20	0.40	0.65	0.15	0.20	0.55	0.35			
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21	13-May-21			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5	5	5	5	5	5	5			
TPH CWG										
Ali >C5-C6 _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
Ali >C6-C8 _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
Ali >C8-C10 _A	<1	-	-	-	-	-	<1	mg/kg	1	A-T-655a
Ali >C10-C12 _A ^{MF}	<1	-	-	-	-	-	<1	mg/kg	1	A-T-655a
Ali >C12-C16 _A ^{MF}	<1	-	-	-	-	-	<1	mg/kg	1	A-T-655a
Ali >C16-C21 _A ^{MF}	<1	-	-	-	-	-	1	mg/kg	1	A-T-655a
Ali >C21-C35 _A ^{MF}	6	-	-	-	-	-	4	mg/kg	1	A-T-655a
Total Aliphatics _A	6	-	-	-	-	-	5	mg/kg	1	A-T-655a
Aro >C5-C7 _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
Aro >C7-C8 _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
Aro >C8-C10 _A	<1	-	-	-	-	-	<1	mg/kg	1	A-T-655a
Aro >C10-C12 _A	<1	-	-	-	-	-	<1	mg/kg	1	A-T-655a
Aro >C12-C16 _A	<1	-	-	-	-	-	1	mg/kg	1	A-T-655a
Aro >C16-C21 _A ^{MF}	<1	-	-	-	-	-	3	mg/kg	1	A-T-655a
Aro >C21-C35 _A ^{MF}	3	-	-	-	-	-	4	mg/kg	1	A-T-655a
Total Aromatics _A	3	-	-	-	-	-	8	mg/kg	1	A-T-655a
TPH (Ali & Aro >C5-C35) _A	9	-	-	-	-	-	13	mg/kg	1	A-T-655a
BTEX - Benzene _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
BTEX - Toluene _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
BTEX - Ethyl Benzene _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
BTEX - m & p Xylene _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
BTEX - o Xylene _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a
MTBE _A [†]	<0.01	-	-	-	-	-	<0.01	mg/kg	0.01	A-T-622a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH ₀ ^{MS}	8.43	8.43	8.58	9.36				pH	0.01	A-T-031e
Total Organic Carbon ₀ ^{MS}	0.36	0.37	0.58	0.72				% w/w	0.03	A-T-032e
Arsenic ₀ ^{MS}	5	6	3	5				mg/kg	1	A-T-024e
Cadmium ₀ ^{MS}	<0.5	<0.5	<0.5	<0.5				mg/kg	0.5	A-T-024e
Copper ₀ ^{MS}	3	3	2	10				mg/kg	1	A-T-024e
Chromium ₀ ^{MS}	11	11	5	27				mg/kg	1	A-T-024e
Chromium (hexavalent) ₀	<1	<1	<1	<1				mg/kg	1	A-T-040e
Chromium (trivalent)	11	11	5	27				mg/kg	1	Calc
Lead ₀ ^{MS}	5	5	3	10				mg/kg	1	A-T-024e
Mercury ₀	0.26	0.26	<0.17	0.25				mg/kg	0.17	A-T-024e
Nickel ₀ ^{MS}	9	9	6	21				mg/kg	1	A-T-024e
Selenium ₀ ^{MS}	<1	<1	<1	<1				mg/kg	1	A-T-024e
Zinc ₀ ^{MS}	24	25	15	51				mg/kg	5	A-T-024e

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
Asbestos in Soil (inc. matrix)										
Asbestos in soil [†]	NAD	-	-	NAD						A-T-045
Asbestos ACM - Suitable for Water Absorption Test? [‡]	N/A	-	-	N/A						A-T-045

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
PAH-16MS										
Acenaphthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Acenaphthylene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Benzo(a)anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Benzo(a)pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Benzo(b)fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Benzo(ghi)perylene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Chrysene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Dibenzo(ah)anthracene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Fluoranthene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Fluorene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Indeno(123-cd)pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Naphthalene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Phenanthrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Pyrene _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a
Total PAH-16MS _A ^{MS}	<0.1	<0.1	<0.1	<0.1				mg/kg	0.1	A-T-019a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
VOC										
Dichlorodifluoromethane _A	-	-	<1	-				µg/kg	1	A-T-006a
Chloromethane _A	-	-	<10	-				µg/kg	10	A-T-006a
Vinyl Chloride (Chloroethene) _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Bromomethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Chloroethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Trichlorofluoromethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1-Dichloroethene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Carbon Disulphide _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Dichloromethane _A	-	-	<5	-				µg/kg	5	A-T-006a
trans 1,2-Dichloroethene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1-Dichloroethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
cis 1,2-Dichloroethene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
2,2-Dichloropropane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Bromochloromethane _A ^g	-	-	<5	-				µg/kg	5	A-T-006a
Chloroform _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1,1-Trichloroethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1-Dichloropropene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Carbon Tetrachloride _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,2-Dichloroethane _A ^g	-	-	<2	-				µg/kg	2	A-T-006a
Benzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Trichloroethene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,2-Dichloropropane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Dibromomethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Bromodichloromethane _A ^g	-	-	<10	-				µg/kg	10	A-T-006a
cis 1,3-Dichloropropene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Toluene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
trans 1,3-Dichloropropene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1,2-Trichloroethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,3-Dichloropropane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Tetrachloroethene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Dibromochloromethane _A ^g	-	-	<3	-				µg/kg	3	A-T-006a
1,2-Dibromoethane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
Chlorobenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1,1,2-Tetrachloroethane _A	-	-	<1	-				µg/kg	1	A-T-006a
Ethylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
m & p Xylene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
o-Xylene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Styrene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Bromoform _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Isopropylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,1,2,2-Tetrachloroethane _A	-	-	<1	-				µg/kg	1	A-T-006a
1,2,3-Trichloropropane _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
Bromobenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
n-Propylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
2-Chlorotoluene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,3,5-Trimethylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
4-Chlorotoluene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
tert-Butylbenzene _A ^g	-	-	<2	-				µg/kg	2	A-T-006a
1,2,4-Trimethylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
sec-Butylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
4-Isopropyltoluene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,3-Dichlorobenzene _A	-	-	<1	-				µg/kg	1	A-T-006a
1,4-Dichlorobenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
n-Butylbenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,2-Dichlorobenzene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,2-Dibromo-3-chloropropane (DCBP) _A	-	-	<2	-				µg/kg	2	A-T-006a
1,2,4-Trichlorobenzene _A	-	-	<3	-				µg/kg	3	A-T-006a
Hexachlorobutadiene _A ^g	-	-	<1	-				µg/kg	1	A-T-006a
1,2,3-Trichlorobenzene _A	-	-	<3	-				µg/kg	3	A-T-006a

Envirolab Job Number: 21/05297

Client Project Name: Locksmill Farm, Spalding

Client Project Ref: D40178

Lab Sample ID	21/05297/11	21/05297/12	21/05297/13	21/05297/15				Units	Limit of Detection	Method ref
Client Sample No	J11	J12	J13	J15						
Client Sample ID	TP6B	TP6B	TP7B	TP8B						
Depth to Top	0.30	0.50	0.25	0.10						
Depth To Bottom										
Date Sampled	13-May-21	13-May-21	13-May-21	13-May-21						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	5	5	5	5						
TPH CWG										
Ali >C5-C6 _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
Ali >C6-C8 _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
Ali >C8-C10 _A	-	-	<1	-				mg/kg	1	A-T-655a
Ali >C10-C12 _A ^{MF}	-	-	<1	-				mg/kg	1	A-T-655a
Ali >C12-C16 _A ^{MF}	-	-	<1	-				mg/kg	1	A-T-655a
Ali >C16-C21 _A ^{MF}	-	-	<1	-				mg/kg	1	A-T-655a
Ali >C21-C35 _A ^{MF}	-	-	3	-				mg/kg	1	A-T-655a
Total Aliphatics _A	-	-	3	-				mg/kg	1	A-T-655a
Aro >C5-C7 _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
Aro >C7-C8 _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
Aro >C8-C10 _A	-	-	<1	-				mg/kg	1	A-T-655a
Aro >C10-C12 _A	-	-	<1	-				mg/kg	1	A-T-655a
Aro >C12-C16 _A	-	-	1	-				mg/kg	1	A-T-655a
Aro >C16-C21 _A ^{MF}	-	-	1	-				mg/kg	1	A-T-655a
Aro >C21-C35 _A ^{MF}	-	-	4	-				mg/kg	1	A-T-655a
Total Aromatics _A	-	-	7	-				mg/kg	1	A-T-655a
TPH (Ali & Aro >C5-C35) _A	-	-	9	-				mg/kg	1	A-T-655a
BTEX - Benzene _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
BTEX - Toluene _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
BTEX - Ethyl Benzene _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
BTEX - m & p Xylene _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
BTEX - o Xylene _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a
MTBE _A [†]	-	-	<0.01	-				mg/kg	0.01	A-T-622a

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

APPENDIX VI

Conditions & Limitations

Conditions & Limitations

Phase I Desk Studies

1. Works undertaken to provide the basis of the Phase I Desk Study report comprise a review of information available from a number of sources/parties (potentially also including the Client) together with a walk over of the site (where applicable and included within the quotation). The opinions given in the Phase I Desk Study are based on the information available from third parties/sources that has been obtained within the available timeframe. GeoDyne Limited assumes all third party information to be true and correct and therefore cannot accept liability for the accuracy of such information supplied.
2. Should additional information become available that may affect the comments and opinions made within the Phase I Desk Study, GeoDyne Limited reserves the right to review such information and make modifications to comments/opinions as appropriate.
3. It should be borne in mind that a Phase I Desk Study collates available information to generate a conceptual model of the site. The actual geotechnical and environmental considerations can only be fully quantified by intrusive investigation works to confirm the accuracy of the conceptual site model.

Phase II Intrusive Investigations

1. Our quotation assumes that access to the site will be arranged by others at no cost to ourselves.
2. We have assumed that free access is available throughout to the entire site and that works can be undertaken during a single mobilisation. Where restricted access is encountered, or where additional unscheduled mobilisations are required, additional costs may be incurred to the client.
3. We have assumed that all available information relating to buried services will be supplied by the Client at no cost to ourselves. No responsibility will be accepted for damage to underground services that have not been brought to our prior attention by the Client.
4. All excavations/boreholes will be backfilled with compacted arisings upon completion, with any excess arisings left proud of ground levels. Excess arisings will not be removed from the site unless specifically requested by the Client. Where we are requested to remove excess arisings, all associated costs will be passed to the Client.
5. We will attempt to leave the site in a clean and tidy state, however, it must be understood that some disturbance of the site is unavoidable during intrusive works.
6. Exploratory holes are positioned approximately on site by GeoDyne Limited. Should the client require precise locations of all exploratory points, additional fees will be incurred. It must be borne in mind that backfilled trial pits can create 'soft spots', therefore, should the Client wish to designate 'no dig' zones, for example under the footprint of proposed structures, these must be brought to our attention prior to commencement of works.
7. Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions or seasonal variation.
8. Trial pits and boreholes examine only a small proportion of the total site area. No liability can be accepted for conditions not revealed in exploratory holes, particularly between positions. All extrapolations of available data are given in good faith.

Payment

1. Payment terms are strictly 28 days from the invoice date.
2. Prior to commencement of works, we require receipt of formal written instruction from the party accepting full financial responsibility for the work. In the absence of such an instruction, we would expect the instructing Consulting Engineers/Architects to accept full financial responsibility for the works.
3. Receipt of instruction to commence work shall be taken as acceptance and compliance of the foregoing conditions.

Liability

1. GeoDyne Limited offer £5,000,000.00 Professional Indemnity Insurance (in aggregate over the year). This shall be the limit of our liability for works undertaken. No individual liability shall be implied to, or accepted by, any employee for works undertaken for and on the behalf of GeoDyne Limited.