Our Ref: SKT/LDM/J15630

29 January 2024

Southern Testing
Environmental & Geotechnical

Southern Testing Laboratories Ltd
Keeble House, Stuart Way
East Grinstead, West Sussex RH19 4QA

t 01342 333100 f 01342 410321
e info@southerntesting.co.uk w southerntesting.co.uk

Lake Investments Ltd
Nash Manor (Estate Office),
Nutbourne Lane,
Nutbourne,
West Sussex
RH20 2HS

For the attention of Lee Goossens
By e-mail: lg@thehuntergroup.co.uk

Dear Sirs,

Re: Geoenvironmental Investigation at Stonehouse Farm, Handcross Road, Plummers Plain, Horsham, West Sussex, RH13 6NZ
National Grid Reference: TQ 22683 28391
Geology: Made Ground over Upper Tunbridge Wells Sand

1 Authority

Our authority for carrying out this work is contained in a copy of our Project Order Form, which was completed and returned by Jackie Ward on behalf of Lake Investments Ltd on the 11th December 2023.

2 Background and Objectives

It is understood that Lake Investments Ltd. are proposing to purchase Stonehouse Farm, with a view to retaining the majority of the land as open fields, or planting woodland, as part of a Habitat Management and Monitoring Plan (HMMP), under the governments Biodiversity Net Gain (BNG) strategy. It is understood that as part of the improvement of the site for wildlife, works may be required along the southern bank of the stream which runs through the centre of the farm.

However, it is understood that waste material (including building waste and demolition rubble) has been imported and deposited in a number of areas across the farm, including along the southern edge of the stream.

We understand that a large modern barn on the west side of the site is proposed to be retained, and possibly utilised as a green waste compost processing facility. There are a number of stockpiles of building waste and rubble adjacent to the west side of this barn.

It is also understood that it is proposed to retain the existing light industrial units on the southeast of the farm, which will be subject to some alterations and improvements.

The object of the investigation was to investigate the land to the immediate south of the stream, and the stockpiles to the west of the barn, in order to determine the nature and extent of the material which has been deposited.

3 Scope

This letter report presents our exploratory hole logs, laboratory test results and our interpretation of these data. As with any site there may be differences in soil conditions between exploratory hole positions.

Any contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them.

The findings and opinions conveyed via this Site Investigation Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The site investigation was conducted and this report has been prepared for the sole internal use and reliance of Lake Investments Ltd and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

Recommendations contained in this report may not be appropriate to alternative development schemes.

4 Site Setting

The site is located on the north side of the B2110 Handcross Road, approximately 3.5 km southwest of the village of Handcross. The approximate National Grid Reference of the site is TQ 22683 28391The site location is indicated on the enclosed Figure 1.

The area subject to this investigation (referred to from here as 'the site'), comprises part of a field on the west side of the site, to the immediate south of the stream which flows through the farm; and two stockpiles of material located to the west of the large barn on the north side of the area under intrusive investigation. See enclosed Figure 2 for details.

4.1 Geology

The British Geological Survey Map No. 302 (1972) indicates that the site geology consists of Tunbridge Wells Sand. The Nuthurst Fault is shown running along the stream, with the Weald Clay, which overlies the Tunbridge Wells Sand, shown to the north.

Tunbridge Wells Sand Formation

The Tunbridge Wells Sand Formation comprises part of the Lower Cretaceous Wealden Group and consists predominantly of fine to medium grained sandstone, siltstone and silty sand rhythms with finely bedded mudstones and thin limestones.

In the western High Weald (between Haywards Heath and Tunbridge Wells) the formation can be divided into three, the informally named Lower and Upper Tunbridge Wells Sand and the intervening Grinstead Clay Member. The succession commences with rhythmically bedded sandstones, siltstones and mudstones of the lower part of the Lower Tunbridge Wells Sand which pass up into the massive sandstones of the Ardingly Sandstone Member. These are overlain by the finely-bedded mudstones, mudstones and silty mudstones with subordinate clay ironstones and shelly limestones of the Grinstead Clay Member. This clay member is itself locally divided into upper and lower parts by the cross-bedded fine sandstone of the Cuckfield Stone Bed. Above the Grinstead Clay Member, the Upper Tunbridge Wells Sand comprises a generally more argillaceous rhythmic succession, including mudstones, siltstones and silty sandstones.

Outside the western High Weald the Grinstead Clay Member is not recognisable and the succession is mapped as undivided Tunbridge Wells Sand Formation. There are a number of minor non-sequences or disconformities throughout the succession and a possible significant gap at the top of the formation that removes much of the Upper Tunbridge Wells Sand.

An important feature of the sandstone is that it is subject to "cambering". On and near steep hill slopes cracks and fissures have been formed because of movement in the underlying Wadhurst Clay. These are usually in two directions, parallel to, and at right angles to, the line of the escarpment, and range from a few mm wide, to a metre wide, or more. The fissures are often infilled with silt but are occasionally open (voids).

4.2 Hydrology and Hydrogeology

The sandstone within the Tunbridge Wells Sand is classified as a Secondary A aquifer, with soils of a high vulnerability, whilst the clay bands form unproductive strata. The site is not situated on or within the vicinity of a ground water source protection zone. Therefore, the groundwater beneath the site would not be considered to be particularly vulnerable.

The stream along the northern boundary of the area under investigation is unnamed. It flows in a westerly direction, forming a tributary to Golding's Stream, which itself flows west, into the River Arun. The stream is would be considered at potential risk from contaminated runoff and leachate arising from the site.

4.3 Site History

A full desk study, including a review of historic mapping was not included in our brief for this investigation. However, given the nature and location of the area under investigation, with the exception of the barn, it is considered unlikely to have any history of previous development.

4.4 Other Sources of Information

A review of the site on Google Earth[1] shows the site as agricultural land, with the course of the stream denoted by trees, from the earliest available photograph dated 2001. The site appears unchanged from 2001 to 2015.

The next available image, from 2018, shows the start of the construction of the barn. A stockpile is also present adjacent to the stream.

By 2020 there is significant disturbance of the site to the south and west of the barn. In 2021 an additional stockpile is present adjacent to the stream. By 2022 the area to the south and west of the barn appears to be vegetated.

[1] Accessed 18th January 2024

Site Investigation Works
A representative from Southern Testing attended site on the 3rd January 2024, to undertaken an intrusive investigation of the soils along the southern bank of the stream, and the stockpiles adjacent to the existing agricultural building. The area subject to investigation is shown on the enclosed Figure 2.

At the time of the site works, the area to the south of the barn comprised rough grass, the surface of which was uneven and boggy, with occasional pieces of protruding building rubble and areas of standing water.

The barn is situated on a level area of ground. To the immediate west of the barn the ground is roughly surfaced with building rubble and gravel. At the time of the intrusive site works two stockpiles, of building rubble/crushed material, were present in this area, along with a stockpile of road surfacing/blacktop. There was also a stockpile of pieces of concrete slab, several sections of large diameter concrete drain pipe, lengths of plastic drainage pipe, bricks and other materials.

To the rear of the barn the site slopes relatively steeply northwards, down towards the stream.

The southern bank of the stream, which forms the northern boundary of the subject site area) is very steep, to near vertical in places, with the water level in the stream around 2m below the site surface. The bank appears to comprise made-up ground, with the trunks of the semi-mature trees along the bank partially covered with soil. Pieces of concrete and hardcore are also evident within the soil along the bank.

A plastic pipe was noted approximately halfway along the southern bank, extending out from the bank, and discharging water to the stream.

4.5 Soils as Found

A series of six machine excavated trial holes were dug, four to the immediate south of the stream and two in the vicinity of the barn. Samples were also taken from the two stockpiles of material located to the west of the barn.

The soils encountered are described in detail in the enclosed exploratory hole logs, but in general comprised a covering of topsoil or Made Ground over Tunbridge Wells Sand. A summary is given below.

Depth (m)	Thickness (m)	Soil Type	Description
GL ≥ 1.6/3.0	>1.6 – 2.8/3.0	MADE GROUND	Soft brown silty CLAY with fine to coarse angular to sub-angular flint, brick, concrete, occasional wood, plastic, ceramic tile, concrete fragments and road surfacing.
1.8/3.0 – 2.0/>3.5	0.2 -> 0.6	MADE GROUND	Compacted off-white putty chalk with some intact chalk fragments. (Absent from TP5 & TP6)
2.0/3.2 – 2.0/>3.5	0.2 - >0.3	silty/fine sandy CLAY	Very stiff brown-grey mottled silty/fine sandy CLAY. (TP3 & TP5 only)
2.2 – >2.3	>0.1	SANDSTONE	Completely weathered grey-brown silty fine grained SANDSTONE. (TP4 only)

Evidence of possible contamination, in the form of Made Ground, was encountered in all of the trial holes.

Photographs showing these soils are enclosed. No visual or olfactory evidence of any petroleum hydrocarbon or other organic chemical contamination was noted, and no suspected asbestos containing materials were observed.

Groundwater was not generally encountered. However, a slow water seep was noted in TP4 at 2.0m bgl, with perched water (with a stagnant odour) in TP6 from 1.4m bgl.

Descriptions of the material within the two stockpiles of building rubble/crushed material are given in the table below:

Soil Sample	Area of stockpile (m)	Location	Description
SP1	~10x28	Small stockpile (see Figure 2)	Fine to coarse GRAVEL of brick and concrete (crushed), with scant matrix of fine to coarse silty sand - Made Ground
SP2-1 & SP2-2	~10x30	Long stockpile (see Figure 2)	Brown clayey fine to coarse SAND with some fine to coarse angular gravel of brick and concrete, occasional wood, plastic, roof tile, Chalk, and pieces of blacktop road surfacing noted – Made Ground

5 Laboratory Test Results

The analytical framework adopted for this investigation is made up of a number of procedures, which are outlined below. All of these are based on a Risk Assessment methodology centred on the identification and analysis of Source – Pathway – Receptor linkages.

The CLEA model[i], provides a methodology for quantitative assessment of the long-term risks posed to human health by exposure to contaminated soils. Toxicological data is used to calculate a Soil Guideline Value (SGV) for an individual contaminant, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

In the absence of any published SGVs for certain substances, Southern Testing have derived or adopted Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH S4UL's[ii] and CL:AIRE Soil Generic Assessment Criteria[iii]. In addition, in 2014, DEFRA[iv] published the results of a research programme to develop screening values to assist decision making under Part 2A of the Environmental Protection Act. Category 4 screening levels have been published for a number of substances, with reference to human health risk only. This guidance includes revisions of the CLEA exposure parameters, presenting parameters for public open space land use scenarios, and also of the toxicological approach. The screening levels represent a low risk scenario, based on a 'Low Level of Toxicological Concern' rather than the 'Minimal Risk' of CLEA, and the analytical results of this investigation may be considered relative to these levels.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

Laboratory test certificates are enclosed, with a summary of the test data provided below.

Made Ground

Seven samples of the Made Ground, from depths of 0.5m to 2.8m bgl. were subject to laboratory analysis for a range of common contaminants.

It is understood that the site is to remain as open land, or possibly planted as woodland. There are no generic tier 1 screening values which apply directly to such a land use. Therefore, given the relatively low concentrations of contaminants present in the samples, the most stringent Tier 1 screening values, for a residential land use including the consumption of home-grown produce have been used for comparative purposes.

Contaminants	Units	Range	Mean	Tier 1 Screening Values Residential with homegrown produce consumption
Asbestos Containing Material	/	None detected		No Asbestos Containing Materials (ACM's) or loose fibres.
Arsenic (As) [2][2]	mg/kg	8.9 – 13	10.8	37
Cadmium (Cd) [2]	mg/kg	<0.2	<0.2	11
Trivalent Chromium (CrIII)* [2]	mg/kg	17 – 26	20.7	910
Hexavalent Chromium (CrVI) [2]	mg/kg	<1.8	<1.8	6
Lead (Pb) [3]	mg/kg	30 – 80	54.0	200
Mercury (Hg) [1,2,7]	mg/kg	<0.3	<0.3	7.6-11
Selenium (Se) [2]	mg/kg	<1.0	<1.0	250
Nickel (Ni) [2,4]	mg/kg	12 – 19	14.9	130
Copper (Cu) [2,4]	mg/kg	16 – 29	20.7	2,400
Zinc (Zn) [2,4]	mg/kg	53 – 150	85.7	3,700

[1] Where ranges of values are given for organic contaminants the screening value is dependent on the Soil +Organic Matter.

[2] LQM/CIEH S4UL (2014). Copyright Land Quality Management Ltd. reproduced with permission; Publication Number S4UL 3116. All rights reserved.

[3] C4SL (DEFRA 2014).

[4] Copper, Zinc and Nickel may have phototoxic effects at the given concentrations. Alternative criteria should be adopted for importation of Topsoil or other soils for cultivation. BS3882:2015 and BS8601:2013 suggest values of 200 to 300mg/kg for Zn, 100 to 200mg/kg for Cu, and 60 to 110mg/kg for Ni, for topsoil and subsoil, depending on pH.

[5] Based on the Surrogate Marker approach and modelled using the modified exposure parameters of C4SL but retaining 'minimal risk' HCV.

[6] Screening criteria derived on a site specific basis if test results indicate.

[7] S4UL for Methyl Mercury, higher concentrations may be tolerable if inorganic mercury is the only species present. Lower concentrations apply for elemental Mercury.

Contaminants	Units	Range	Mean	Tier 1 Screening Values Residential with homegrown produce consumption
Phenol [1,2]	mg/kg	<1.0	<1.0	120-380
Benzo[a]pyrene [1,5]	mg/kg	0.32 -0.94	0.6	1.7-2.4
Naphthalene [1,2]	mg/kg	0.19 – 0.4	0.3	2.3-13
Total Cyanide (CN) [6]	mg/kg	<1.0	<1.0	/
Acidity (pH values)	Units	7.9 – 9.5	8.6	/
Soil Organic Matter	%	1.3 – 3.3	2.2	/

** Assumed as Total Cr minus CrVI*

The concentrations of potential contaminants in Made Ground are well below the Tier 1 screening values for a Residential land use including home-grown produce consumption. The concentrations of potentially phytotoxic metals (copper, nickel and zinc) are also well below the values given in the British Standards for Topsoil and Subsoil (BS3882:2015 and BS8601:2013 respectively).

No asbestos containing materials, or loose fibres of asbestos, were detected by the laboratory in the samples of subject to analysis.

No significant concentrations of petroleum hydrocarbons were recorded in the samples.

Stockpiles

Given the nature of the material in the stockpiles, which comprises crushed brick, concrete and anthropogenic material, the Tier 1 screening values for a commercial/industrial land use are considered most appropriate, as it is understood that some of this material may be re-used as subbase within the floor construction to the adjacent barn.

Contaminants	Units	SP1 – 1	SP2 – 1	SP2 – 2	Commercial/ Industrial Tier 1 Screening Values
Asbestos Containing Material	/	Not detected	Not detected	Not detected	/
Arsenic (As) [2]	mg/kg	9.3	9.7	11	640
Cadmium (Cd) [2]	mg/kg	<0.2	0.5	0.6	190
Trivalent Chromium (CrIII)* [2]	mg/kg	18	15	15	8600
Hexavalent Chromium (CrVI) [2]	mg/kg	<1.8	<1.8	<1.8	33
Lead (Pb) [3]	mg/kg	45	150	120	2330
Mercury (Hg) [1,2,7]	mg/kg	<0.3	0.4	<0.3	29-320
Selenium (Se) [2]	mg/kg	<1.0	<1.0	<1.0	12,000
Nickel (Ni) [2,4]	mg/kg	14	13	12	980

Contaminants	Units	SP1 – 1	SP2 – 1	SP2 – 2	Commercial/ Industrial Tier 1 Screening Values
Copper (Cu) [2,4]	mg/kg	36	34	32	68,000
Zinc (Zn) [2,4]	mg/kg	72	100	110	730,000
Phenol [1,2]	mg/kg	<1.0	<1.0	<1.0	440-1300
Benzo[a]pyrene [1,5]	mg/kg	0.95	5.2	3	36
Naphthalene [1,2]	mg/kg	0.08	1.9	0.25	77-430+
Total Cyanide (CN) [6]	mg/kg	<1.0	<1.0	<1.0	/
Acidity (pH values)	Units	9.9	9.5	9.8	/
Soil Organic Matter	%	1.5	1.9	1.9	/

** Assumed as Total Cr minus CrVI*

The concentrations of potential contaminants in the samples taken from the two stockpiles were well below the Tier 1 screening values for a commercial/industrial land use.

No asbestos containing materials, or loose fibres of asbestos, were detected by the laboratory in the samples of subject to analysis.

No significant concentrations of petroleum hydrocarbons were recorded in the samples.

Leachate Testing

Three samples (TP2@0.5m, TP4@0.5m and TP5@1.5m) were submitted for laboratory leachate analysis, to examine whether the Made Ground poses a potential risk to the stream and/or groundwater. In the absence of specific assessment criteria for groundwater, the test results are compared with EQS for fresh waters, or drinking water standards where there is no EQS.

Contaminants	Units	TP2@0.5m	TP4@0.5m	TP5@1.5m	Freshwater EQS
Acidity (pH values)	/	8.1	8	7.4	/
Free Cyanide (CN)	µg/l	<10	<10	<10	1
Total Phenols (HPLC)	µg/l	<3.5	<3.5	<3.5	7.7
Arsenic (As)	µg/l	2.7	2.8	2.7	50
Boron (B)	µg/l	14	13	19	2000
Cadmium (Cd)	µg/l	<0.08	<0.08	<0.08	0.08 – 0.15^
Chromium (Cr)	µg/l	1	1.1	1.5	3.4 (Cr VI)
Copper (Cu)	µg/l	**14**	**13**	**43**	1
Iron (Fe)	µg/l	0.44	0.57	0.67	1000
Lead (Pb)	µg/l	<1.0	<1.0	**2.4**	1.2 (14M)

Contaminants	Units	TP2@0.5m	TP4@0.5m	TP5@1.5m	Freshwater EQS
Mercury (Hg)	µg/l	<0.5	<0.5	<0.5	0.07 [M]
Nickel (Ni)	µg/l	0.3	0.7	2.1	4
Selenium (Se)	µg/l	5.1	<4.0	<4.0	10*
Zinc (Zn)	µg/l	**13**	**11**	**20**	10.9
Naphthalene	µg/l	<0.01	<0.01	0.14	2
Benzo(a)pyrene (BaP)	µg/l	<0.01	<0.01	**0.2**	0.00017 (0.27[M])

[A] *Annual Average*

[M] *Maximum Allowable Concentration*

^ *Value dependant on water hardness*

* *Drinking water standard*

Exceedances of the screening values were recorded for copper and zinc. However, the screening values for both copper and zinc relate to the bioavailable concentrations of these elements, with the screening value for zinc also taking into account the ambient background concentration.

Lead and benzo(a)pyrene also elevated in the sample from TP5. Again, the EQS for lead is based on the bioavailable concentration. The concentrations of lead and benzo(a)pyrene were both below the maximum allowable concentration.

6 Discussion

It is understood that it is proposed to undertake improvement works across the land belonging to Stonehouse Farm, with a view to retaining the majority of the fields as open land, or planting woodland, as part of a Habitat Management and Monitoring Plan (HMMP), under the governments Biodiversity Net Gain (BNG) strategy.

6.1 Deposited Material (Made Ground)

The trial holes excavated along the southern side of the stream indicate that imported material has been placed to depths of between 2.0m to 3.5m+, with the depth of the material placed becoming deeper from east to west, in keeping with the anticipated natural topography of the area. From aerial imagery it appears that a layer of chalk may have been placed along the stream, prior to the placement of the fill material. The intrusive investigation works have confirmed this, with the top of a compacted layer of chalk found at depths of between 1.8m and 3.0m bgl. The chalk layer is 0.2 – >0.6m thick, and seen to be overlying the natural Tunbridge Wells Sand in TP3 and TP4. Above this, the Made Ground comprises re-worked soft brown silty clay with variable amounts of anthropogenic material, including flint, brick, concrete, occasional wood, plastic, ceramic tile, concrete fragments and road surfacing. It appears that this material has been loose tipped, with no obvious signs of compaction or laying of different materials.

Up slope, to the south of the stream, the deposited material appears to be shallower in depth, encountered to 2.3m in TP5, directly overlying the Tunbridge Wells Sand.

With the exception of the presence of anthropogenic material, no visual or olfactory evidence of potential contamination, such as asbestos containing material, petroleum hydrocarbons or other odorous or stained materials were found during the intrusive works. Laboratory analysis of selected samples of the Made Ground recorded low concentrations of the potential contaminants tested for, which (in the absence of any applicable generic screening values for the type of land use proposed for the site) were well below the most stringent tier 1 screening values. No asbestos containing materials, or loose asbestos fibres, were detected by the laboratory.

Leachate testing of selected samples returned potentially elevated results for copper, zinc, lead and benzo(a)pyrene. However, the screening values assume direct contact with the groundwater, or discharge to a freshwater body. Given the wet autumn and winter period leading up to the site works, although boggy on the surface, with the exception of TP4 in which a slow water seep was noted, and TP6 (located away from the stream) in which perched water was encountered at 1.4m bgl, groundwater was not encountered within the trial holes. Therefore, whilst there will be percolation of surface water, and lateral flow of water through the Made Ground, this is not considered to pose a significant risk to the stream. Surface water runoff is also not considered to pose a significant risk, provided the site remains vegetated.

A plastic pipe was noted to be discharging water to the stream. It is recommended that this be investigated to ascertain where it runs from, and therefore what may potentially be discharging to the stream.

6.2 Stockpiles

Two stockpiles of crushed brick, concrete and anthropogenic material were present to the west of the barn, which forms the southern boundary of the site area. It is understood that some of this material may be re-used as subbase within the floor construction to the adjacent barn.

Whilst the physical suitability of this material for re-use in this way is outside of the scope of these investigation works, no concentrations of contaminants above the Tier 1 screening values for a commercial/industrial land use, and no asbestos containing materials or loose asbestos fibres, were found in the samples taken from the stockpiles.

7 Conclusions

A significant volume of material, consisting of reworked clay with variable amounts of anthropogenic material, has been deposited across the site. The intrusive investigation works, and subsequent laboratory analysis of selected samples undertaken to date, have not identified any significant contamination within this material. However, it should be noted that given the significant volume of material, and its unknown origin, it is possible that more onerous contamination could be present in discreet pockets.

If you have any queries or we can be of further assistance, please do not hesitate to contact us

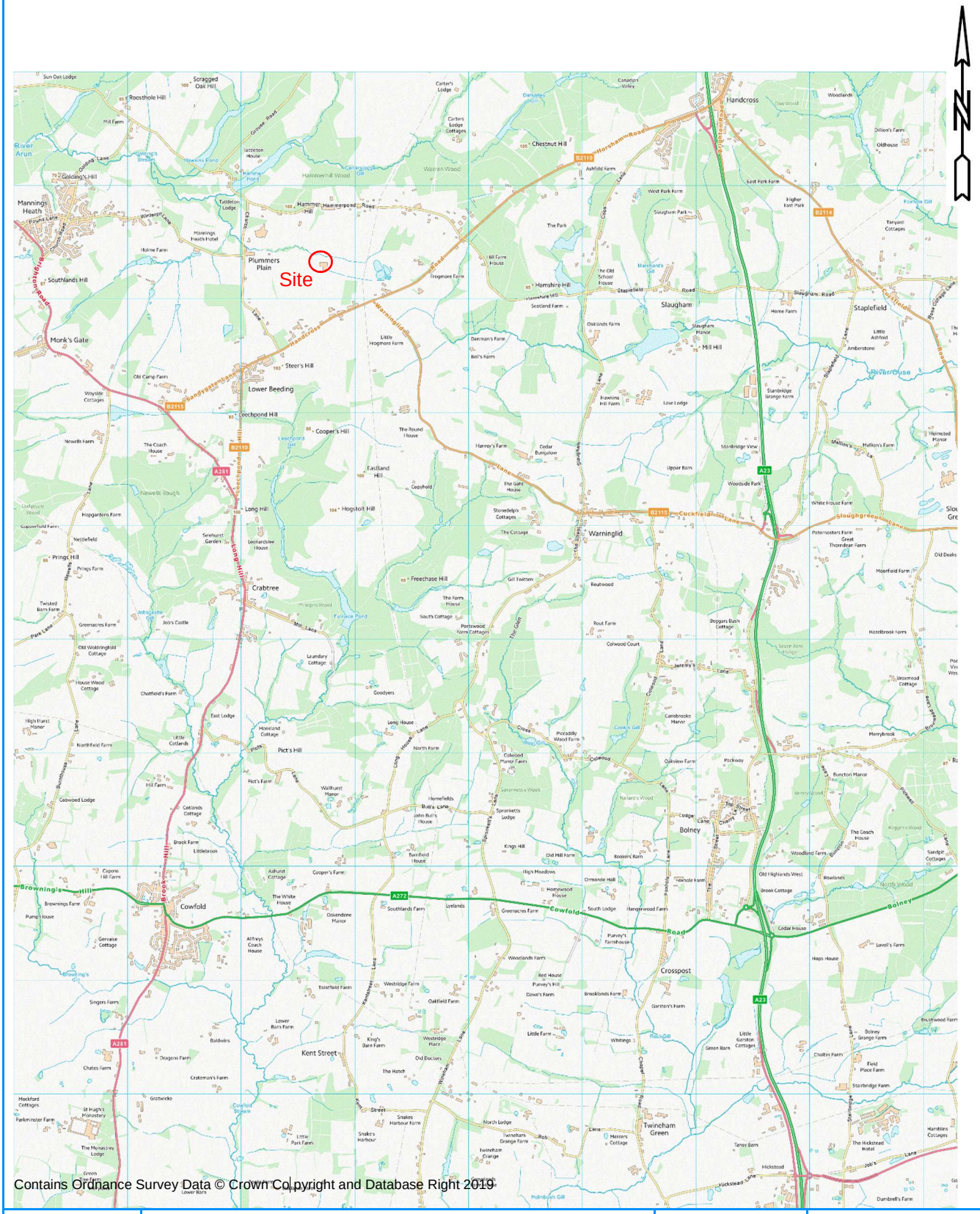
Yours faithfully,

Sarah Toms MSc MIEnvSc PIEMA
For and on behalf of
Southern Testing Laboratories Limited
DDI: 01342 333 129
Email: stoms@southerntesting.co.uk

Encs

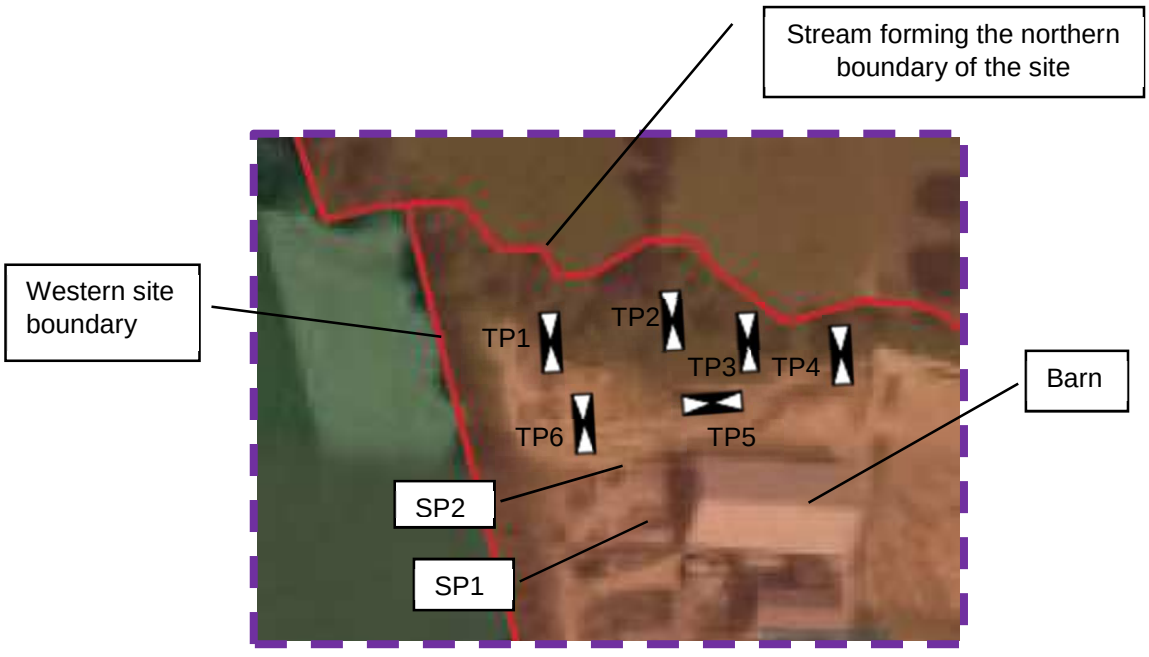
Figure 1 – Site location
Figure 2 – Site plan & trial hole locations
Photographs
Exploratory hole logs
Laboratory test certificates

[i] Environment Agency, "Updated technical background to the CLEA model," 2009.
[ii] C. Nathanail, C. McCaffrey, A. Gillett and R. &. N. J. Ogden, "The LQM/CIEH S4ULs for Human Health Risk Assessment," Land Quality Press, Nottingham, 2015.
[iii] EIC/AGS/CL:AIRE, "Soil Generic Assessment Criteria for Human Health Risk Assessment," 2010
[iv] DEFRA, "SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination," 2014



Site:	Stonehouse Farm, Handcross Road, Plummers Plain, Horsham, West Sussex, RH13 6NZ	Project ID	J15630
Figure 1	Site Location Plan	Date:	24/01/2024

Stonehouse Farm, Handcross Road, Plummers Plain, Horsham RH13 6NZ



SNB: Positions of exploratory holes / test positions are only indicative unless dimensioned.

Site:	Stonehouse Farm, Handcross Road, Plummers Plain, Horsham, West Sussex, RH13 6NZ	Project ID	J15630
Figure 2	Trial hole Location Plan	Date:	24/01/2024

Plate 1: North side of barn.

Plate 2: Built up land to the stream on the northern site boundary.

Plate 3: As plate 2.

Plate 4: North west corner of the site.

Plate 5: Built up land to west site boundary.

Plate 6: Concrete rubble evident in the bank along the stream.

Plate 7: Northwest corner of the site, along the stream.

Plate 8: West side of barn.

Plate 9: Stockpile (SP1) adjacent to the barn.

Plate 10: Larger, mixed stockpile (SP2) to north barn side.

Plate 11: SP2.

Plate 12: Blacktop stockpile.

Plate 13: Looking north towards the stream

Plate 14: TP1

Plate 15:. TP1 arisings

Plate 16: TP2 – side unstable

Plate 17:. TP2 arisings.

Plate 18: TP3

Plate 19: Arisings from TP3.

Plate 20: TP4

Plate 21:. Arisings from TP4.

Plate 22: TP5

Plate 29:. TP6

Plate 30: Arisings from TP6

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP1
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				ER
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.50	ES			(1.00)			Soft brown silty CLAY with some fine to coarse angular to subangular gravel of flint, brick, concrete, occasional wood noted. MADE GROUND
0.80	HP	UCS(kPa)=100					
						1.00	
1.50	HP	UCS(kPa)=40		(1.50)			Soft brown silty CLAY with occasional fine to coarse angular to subangular gravel of brick, concrete, and flint. MADE GROUND
						2.50	
2.80	ES			(0.40)			Soft dark brown silty CLAY with occasional fine to coarse angular gravel of chalk, brick, concrete and occasional paving slabs . MADE GROUND
						2.90	
				(0.60)			off white Chalk, compacted, recovered as putty chalk with some intact fragments Made Ground
						3.50	
							Pit terminated at 3.50m

Pit Dimension (m)		Pit Stability:	unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.50	Remarks:				
Length:	3.50	Dry				
Depth:	3.50					
Status:		FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP2
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				ER
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.50	ES			(3.00)			Soft brown silty CLAY with occasional to some fine to coarse gravel of brick, concrete, flint, chalk, occasional plastic, ceramic tile fragments. MADE GROUND
2.90	ES			(0.50)		3.00	Off white compacted CHALK, recovered as putty chalk with some intact pieces. MADE GROUND
						3.50	Pit terminated at 3.50m

Pit Dimension (m)		Pit Stability:	unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.70	Remarks:				
Length:	3.50	Dry				
Depth:	3.50					

Status:	FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP3
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				ER
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.80	ES			(2.60)			Soft brown silty sandy CLAY with occasional to some angular fine to coarse gravel, of concrete, brick, chalk, flint and occasional blocks of concrete. MADE GROUND
2.80	ES			(0.30)		2.60	Soft dark brown / brown grey silty CLAY with frequent fine to coarse angular to subrounded gravel, of flint and chert. MADE GROUND
				(0.30)		2.90	Off white compacted CHALK, , recovered as putty Chalk with occasional intact pieces. MADE GROUND
				(0.30)		3.20	Very Stiff brown grey mottled fissured silty CLAY.
						3.50	Pit terminated at 3.50m

Pit Dimension (m)		Pit Stability:	very unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.90	Remarks:				
Length:	3.70	Dry				
Depth:	3.50					

Status:	FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP4
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				ER
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.50	ES			(1.80)			Soft brown silty CLAY with occasional to some fine to coarse angular gravel of brick, concrete, chalk, flint. occasional blocks of concrete. MADE GROUND
				(0.20)		1.80	Off white compacted CHALK, recovered as putly Chalk, with occasional intact pieces. MADE GROUND
				(0.20)		2.00	Stiff brown grey mottled silty fine sandy CLAY.
				(0.10)		2.20 2.30	Completely weathered, grey brown mottled, thickly bedded, very weak to weak, silty fine grained SANDSTONE. Pit terminated at 2.30m

1 2 3 4

Pit Dimension (m)		Pit Stability:	unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.50	Remarks:		2.00	03/01/2024 00:00:00	very slow seepage
Length:	3.00	Groundwater noted at 2.0mbgl, slow seepage				
Depth:	2.30					

Status:	FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP5
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				ER
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.50	ES			(0.80)			Loose, brown fine to coarse angular GRAVEL of concrete blocks, brick, chalk, with scant matrix of brown silty fine sandy clay. MADE GROUND
						0.80	Soft brown silty CLAY with occasional fine to coarse angular gravel of concrete, brick, concrete blocks, with pockets of dark brown silty clay. MADE GROUND
1.50	ES			(1.50)			
				(0.30)		2.30	Soft to firm, becoming firm, fissured brown grey mottled silty fine sandy CLAY.
						2.60	Pit terminated at 2.60m

Pit Dimension (m)		Pit Stability:	unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.50	Remarks:				
Length:	3.00	Dry				
Depth:	2.60					

Status:	FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	TP6
	03/01/2024	J15630	TP	Sheet 1 of 1

Client:	The Hunter Group	Co-ordinates:	Level (m AOD)	Logger:
				er
Project Name:	Stonehouse Farm	Location:	Handcross Road, Plummers Plain, RH13 6NZ	

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m bgl)	Type	Results					
0.50	ES			(1.60)		1.60	Soft brown silty sandy CLAY with some angular fine to coarse gravel of brick, concrete, slab, tile, road surfacing, wood, woven bulk deliver bag and plastic. MADE GROUND
							Pit terminated at 1.60m

Pit Dimension (m)		Pit Stability:	unstable	Water Strikes		
		Weather:		Depth (m)	Date/Time	Remarks
Width:	0.90	Remarks:		1.40	03/01/2024 00:00:00	perched water, fast seepage, becoming slow
Length:	4.00	Perched water ingress at 1.4mbgl, stagnant odour				
Depth:	1.60					

Status:	FINAL	Log Print Date and Time:	29/01/2024 03:17	Log Approved By:	

Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100

e: contamresults@southerntesting.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-000099

Project / Site name:	Stonehouse Farm, Horsham	**Samples received on:**	05/01/2024
Your job number:	J15630	**Samples instructed on/ Analysis started on:**	05/01/2024
Your order number:	J15630_1	**Analysis completed by:**	17/01/2024
Report Issue Number:	1	**Report issued on:**	17/01/2024
Samples Analysed:	10 soil samples - 3 leachate samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham
Your Order No: J15630_1

Lab Sample Number				101733	101734	101735	101736	101737
Sample Reference				SP1	SP2-2	SP2-1	TP1	TP2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00	0.00	0.00	2.80	0.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024	03/01/2024	03/01/2024
Time Taken				1000	1000	1000	1000	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	32	< 0.1	44	44
Moisture Content	%	0.01	NONE	12	13	16	13	13
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.3	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	DSA
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	9.9	9.8	9.5	9.5	8.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2300	140	260	920	62
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.16	0.0703	0.131	0.46	0.0311
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1160	70.3	131	460	31.1
Sulphide	mg/kg	1	MCERTS	2.1	6.9	3.8	38	2.7
Organic Matter (automated)	%	0.1	MCERTS	1.5	1.9	1.9	1.3	2.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.08	0.25	1.9	0.19	0.32
Acenaphthylene	mg/kg	0.05	MCERTS	0.08	0.14	0.32	0.07	0.1
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.38	2	0.07	0.06
Fluorene	mg/kg	0.05	MCERTS	0.05	0.42	2.7	0.11	0.09
Phenanthrene	mg/kg	0.05	MCERTS	0.55	4.6	13	0.65	0.73
Anthracene	mg/kg	0.05	MCERTS	0.14	1	3.6	0.14	0.17
Fluoranthene	mg/kg	0.05	MCERTS	1.3	6.7	14	1.2	1.8
Pyrene	mg/kg	0.05	MCERTS	1.2	5.8	12	1.1	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.69	2.9	5.7	0.48	0.82
Chrysene	mg/kg	0.05	MCERTS	0.75	3	5.3	0.46	0.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	3.4	6	0.64	1.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.34	1.6	2.7	0.22	0.39
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.95	3	5.2	0.51	0.94
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.61	1.9	3.2	0.35	0.68
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.15	0.39	0.7	0.07	0.12
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.7	2	3.2	0.4	0.7
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	8.73	37.5	81.6	6.61	10.6

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham
Your Order No: J15630_1

Lab Sample Number				101733	101734	101735	101736	101737
Sample Reference				SP1	SP2-2	SP2-1	TP1	TP2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00	0.00	0.00	2.80	0.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024	03/01/2024	03/01/2024
Time Taken				1000	1000	1000	1000	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	11	9.7	8.9	10
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4	0.5	0.5	1	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	0.5	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	15	15	19	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36	32	34	16	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	45	120	150	30	53
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	12	13	15	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	22	24	26	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72	110	100	53	74
Petroleum Hydrocarbons								
TPH Total >C6 - C40 EH_CU+HS_1D_TOTAL_#1_#2	mg/kg	10	NONE	140	120	150	16	22
Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C10 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	140	120	150	16	22

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham
Your Order No: J15630_1

Lab Sample Number				101738	101739	101740	101741	101742
Sample Reference				TP3	TP4	TP5	TP5	TP6
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.80	0.50	0.50	1.50	0.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024	03/01/2024	03/01/2024
Time Taken				1100	1230	1300	1300	1330
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	17	14	19	16
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.5	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	DSA
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.1	8.3	9.1	7.9	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	350	84	670	210	780
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.173	0.0419	0.337	0.103	0.391
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	173	41.9	337	103	391
Sulphide	mg/kg	1	MCERTS	2	< 1.0	16	4	10
Organic Matter (automated)	%	0.1	MCERTS	2.2	1.8	1.3	3.3	3.3
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.23	0.2	0.31	0.29	0.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	0.09	0.08	0.07	0.12
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.09	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	0.07	0.07	0.12	0.09	0.14
Phenanthrene	mg/kg	0.05	MCERTS	0.61	0.57	0.66	0.52	0.89
Anthracene	mg/kg	0.05	MCERTS	0.17	0.14	0.19	0.07	0.3
Fluoranthene	mg/kg	0.05	MCERTS	1.4	1.5	1.4	0.8	1.8
Pyrene	mg/kg	0.05	MCERTS	1.3	1.4	1.3	0.77	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.63	0.63	0.62	0.29	0.8
Chrysene	mg/kg	0.05	MCERTS	0.63	0.64	0.63	0.36	0.76
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.8	0.88	0.75	0.4	1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.4	0.37	0.41	0.21	0.37
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.7	0.68	0.56	0.32	0.81
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.46	0.51	0.41	0.23	0.46
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.1	0.11	0.09	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.55	0.56	0.46	0.25	0.53
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	8.19	8.34	8.12	4.67	10.2

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham
Your Order No: J15630_1

Lab Sample Number				101738	101739	101740	101741	101742
Sample Reference				TP3	TP4	TP5	TP5	TP6
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.80	0.50	0.50	1.50	0.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024	03/01/2024	03/01/2024
Time Taken				1100	1230	1300	1300	1330
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	10	13	11	11
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.7	1.4	0.3	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	21	24	17	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	20	21	29	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	80	43	46	50	76
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	12	15	13	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25	33	43	25	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	67	67	150	99
Petroleum Hydrocarbons								
TPH Total >C6 - C40 EH_CU+HS_1D_TOTAL_#1_#2	mg/kg	10	NONE	33	< 10	< 10	16	23
Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C10 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	33	< 10	< 10	16	23

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

4041

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham

Your Order No: J15630_1

Lab Sample Number				101737	101739	101741
Sample Reference				TP2	TP4	TP5
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	1.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024
Time Taken				1030	1230	1300
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	8.1	8	7.4
Electrical Conductivity	µS/cm	10	ISO 17025	94	99	65
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10
Sulphide	µg/l	5	NONE	11	9.4	9.4
Chloride	mg/l	0.15	ISO 17025	0.39	0.73	1.8
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15	2200
Chemical Oxygen Demand (Settled)	mg/l	2	ISO 17025	10	8.2	27
Phenols by HPLC						
Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5
Total Phenols						
Total Phenols (HPLC)	µg/l	3.5	NONE	< 3.5	< 3.5	< 3.5
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.14
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.19
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.07
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.21
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	2.7
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.82
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	1.1
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	1.5
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.31
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.27
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.13
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.07
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.2
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	7.64

UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 24-000099
Project / Site name: Stonehouse Farm, Horsham

Your Order No: J15630_1

Lab Sample Number				101737	101739	101741
Sample Reference				TP2	TP4	TP5
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	1.50
Date Sampled				03/01/2024	03/01/2024	03/01/2024
Time Taken				1030	1230	1300
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (dissolved)	µg/l	1	ISO 17025	2.7	2.8	2.7
Boron (dissolved)	µg/l	10	ISO 17025	14	13	19
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	1	1.1	1.5
Copper (dissolved)	µg/l	0.7	ISO 17025	14	13	43
Iron (dissolved)	mg/l	0.004	ISO 17025	0.44	0.57	0.67
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	2.4
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.3	0.7	2.1
Selenium (dissolved)	µg/l	4	ISO 17025	5.1	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	13	11	20

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 24-000099
Project / Site name: Stonehouse Farm, Horsham

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
101733	SP1	None Supplied	0	Brown sand with gravel and vegetation
101734	SP2-2	None Supplied	0	Brown clay and sand with gravel and stones
101735	SP2-1	None Supplied	0	Brown clay and sand with gravel
101736	TP1	None Supplied	2.8	Brown clay and sand with vegetation and stones
101737	TP2	None Supplied	0.5	Brown clay and sand with vegetation and stones
101738	TP3	None Supplied	2.8	Brown clay and sand with gravel
101739	TP4	None Supplied	0.5	Brown clay and sand with gravel and vegetation
101740	TP5	None Supplied	0.5	Brown clay and sand with gravel and vegetation
101741	TP5	None Supplied	1.5	Brown loam and sand with gravel and vegetation
101742	TP6	None Supplied	0.5	Brown clay and loam with gravel and vegetation

Analytical Report Number : 24-000099
Project / Site name: Stonehouse Farm, Horsham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Sulphide in leachate	Determination of sulphide in leachate by ion selective electrode	In-house method	L029	W	NONE
Phenols, speciated, in leachate, by HPLC	Determination of speciated phenols by HPLC	In-house method based on Blue Book Method	L030	W	NONE
Electrical conductivity at 20°C of leachate	Determination of electrical conductivity in leachate by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Chemical Oxygen Demand in leachate (Settled)	Determination of settled COD in leachate by reflux oxidation with acidified K2Cr2O7 followed by colorimetry	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065	W	ISO 17025
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025

Analytical Report Number : 24-000099
Project / Site name: Stonehouse Farm, Horsham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Chloride in leachate	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS
pH at 20°C in leachate (automated)	Determination of pH in leachate by electrometric measurement	In-house method	L099	W	ISO 17025
SVOCs and PAHs in leachate	SVOCs and PAHs in leachate	In-house method	L102B		ISO 17025
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total