

45-54 Saffron Hill and 3 Saffron Street, London Factual Report

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Abbreviations

Abbreviation	Full name	Abbreviation	Full name
ACM	Asbestos-containing Material	PL	Plastic Limit
BGS	British Geological Survey	PI	Plasticity Index
BH	Borehole	PSD	Particle Size Distribution
BRE	Building Research Establishment	SGV	Soil Guideline Value
BSI	British Standards Institution	SOM	Soil Organic Matter
BS	British Standard	SPT	Standard Penetration Test
CIRIA	Construction Industry Research and Information Association	SPZ	Source Protection Zone
GAC	Generic Assessment Criteria	SVOC	Semi-volatile Organic Compounds
LL	Liquid Limit	TPH	Total Petroleum Hydrocarbon
m bgl	Metres Below Ground Level	UST	Underground Storage Tank
m OD	Metres Ordnance Datum	UXO	Unexploded Ordnance
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compound
PCB	Polychlorinated Biphenyl	WAC	Waste Acceptance Criteria
PID	Photo Ionisation Detector		

1. Introduction

A2 Site Investigation (A2SI) were appointed to undertake a ground investigation at 14 St Cross St, London EC1M 3JY. The ground investigation was specified by Heyne Tillett Steel, who also acted as Investigation Supervisor.

A desk study has been completed for the site (report ref 38823-A2SI-XX-XX-RP-Y-0001-00, dated October 2023), and should be read in conjunction with this report.

2. Site Location

The site is situated at 45-54 Saffron Hill and 3 Saffron Street, London as presented in Figure 2.1. The site is located at National Grid Reference 531430, 181950 and falls within the administrative boundaries of the London Borough of Camden. The site currently includes a multi-storey car park and office space comprised of eight stories with a lower ground floor. The top two floors are used as office spaces while the bottom six are used as a car park. The site is bounded to the north by Safron Street, St Cross Street to the south, Saffron Hill to the west and mid-rise commercial buildings (currently utilised as office buildings) at 75-79 Farringdon Road to the east.



Figure 2.1 Site location and extent shown in red

3. Proposed Development

The scheme for the proposed development consists of the demolition of the existing structure and the construction of a new 9-storey commercial office building with a lower ground floor and a basement. The basement is proposed to take a rectangular shape located at the centre of the site footprint. The existing piles are to be cut down to allow for the proposed development of the new basement and raft solution. To account for areas of high loading, new piles may be incorporated into the design.

Proposed plans of the basement, the lower ground floor, and the ground floor are presented as Figure 3.1, Figure 3.2, and Figure 3.3, respectively. The proposed development plans are valid at the time of writing this report.

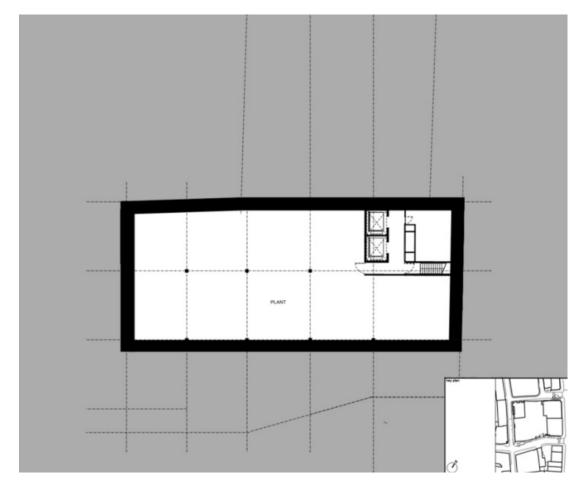


Figure 3.1 Proposed Basement Plan



Figure 3.2 Proposed Lower Ground Floor Plan

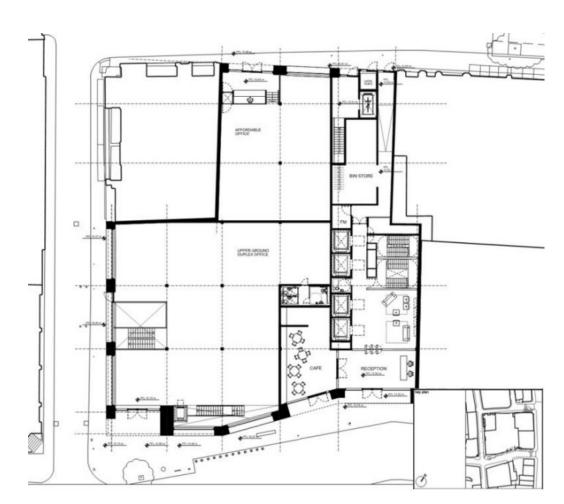


Figure 3.3 Proposed Ground Floor Plan

4. Scope and Purpose of the Investigation

A2SI have been commissioned to undertake a site investigation at the site comprising:

- 4 No. modular cable percussion boreholes up to 30.00m bgl.
 - o 2 No. boreholes are located proximal to pile locations to identify pile underreams.
 - 2 No. boreholes are for the purpose of geotechnical testing and sampling, geo-environmental sampling and well installation.
- 4 No. dynamic sampling boreholes up to 3.00m bgl.
- 2 No. combined machine excavated and hand-dug trial pits to investigate pile cap and pile dimensions.
- 2 No. pile core samples.
- 6 No. standpipe installations within the boreholes for ground gas and groundwater monitoring.
- 2 No. geophysical installations for the purpose of parallel seismic testing.
- Appropriate soil sampling.
- Geotechnical in situ testing.
- Geotechnical, geoenvironmental and material laboratory testing.
- Geophysical testing in the form of parallel seismic to investigate existing pile depths.
- Monitoring of groundwater levels and ground gas concentrations (3 No. visits over three weeks).

4.1. Investigation Strategy

Table 4.1 summarises the strategy for the phases of the intrusive investigation.

Table 4.1 Summary of investigation strategy

Location ID	Method	Purpose/Comments	
WS01-WS04	Dynamic sampling boreholes to depth of 3.00m bgl.	To determine the shallow ground conditions across the site and obtain geo-environmental samples.	
BH01A, BH01B, BH02A, BH02B	Cable percussion boreholes to 30.00m depth.	To determine the deeper ground conditions in order to facilitate geotechnical design and parallel seismic testing.	
TP01 & TP02	Trial pitting using a combination of machine excavation and hand digging to a maximum depth of 2.5m bgl. Core sample to be obtained from pile via angled coring.	To determine depth and dimensions of existing pile cap, pile diameters and obtain core sample of existing pile.	

5. Anticipated Ground Conditions

Table 5.1 presents a review of available geological maps and memoirs, including the online British Geological Survey (BGS) "Geology Viewer", previous site investigations and other relevant data.

According to the BGS, the majority of the site is indicated to be underlain by superficial deposits of the Hackney Gravel Member consisting predominantly of sand and gravel, locally with lenses of clay. The bedrock geology is indicated to be the London Clay Formation, comprising of clay, silt, and sand of the Palaeogene Period. Underlying this formation, the Lambeth Group is anticipated, which is dated to the Palaeogene Period. According to the BGS, this strata is comprised of vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignite's and occasional sandstone and conglomerate.

Unit	Elevation ^[1] (m OD)	Depth ¹ (m bgl)	Thickness (m)	Description
Made Ground	+13.0	0.00	1.00	Variable anthropogenic deposits
Hackney Gravel Member	+12.0	1.00	2.00	Medium dense brown sandy to very sandy medium to coarse with occasional fine to coarse subangular to subrounded flint.
London Clay Formation	+10.0	3.00	15.00	Firm fissured brownish grey silty clay with occasional lenses of silt and locally sandy
Lambeth Group	-5.0	18.00	14.00	Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones/calcrete and lignites and occasional sandstone and conglomerate
Thanet Formation	-19.0	32.00	5.00	Very dense grey locally green grey at upper interface slightly silty mainly fine and medium sand.
Chalk Group	-24.0	37.00	>2.5 (base unproven)	Very weak low density white chalk with fractures. The Chalk is friable blocky and readily breaks. Fractures are very closely spaces horizontal and sub-horizontal planar and slightly undulating.

Table 5.1 Anticipated geological sequence

1. Depths refer to top of stratum.



6. Limitations of Report

This report has been prepared in accordance with the specification provided by the client. The data reported relates to the specific locations where each exploratory hole was formed and may not represent the ground and groundwater conditions of the site as a whole. Furthermore, it should be considered that groundwater levels may vary throughout the year due to seasonal conditions and other influences such as flooding, leaking mains, storm drainage and foul water systems.

7. Standards

The site investigation, soil descriptions and laboratory testing were undertaken in accordance with following standards:

- AGS Assessment and Control of Asbestos Risk in Soil Part 1: Protection of Personnel working on Ground Investigations, May 2021.
- BGS Geology Viewer: 2022. https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/. British Geological Survey.
- BGS GeoIndex: 2022. <u>https://www.bgs.ac.uk/map-viewers/geoindex-onshore/</u>. British Geological Survey.
- British Standards Institution BS 10175:2011+A2:2017, Investigation of potentially contaminated sites code of practice.
- British Standards Institution BS 5930:2015+A1:2020, Code of practice for site investigations.
- British Standards Institution BS 1377-2:2022, Methods of test for soils for civil engineering purposes Part 2: Classification tests and determination of geotechnical properties.
- British Standards Institution BS 1377-9:1990, Methods for test for soils for civil engineering purposes In-situ tests.
- British Standards Institution BS 8576:2013 Guidance on investigations for ground gas permanent gases and volatile organic compounds (VOCs).
- British Standards Institution BS EN ISO 14688-1:2018, Geotechnical investigation and testing identification and classification of soil. Identification and description.
- British Standards Institution BS EN ISO 22475-1: 2021 : Geotechnical investigation and testing Sampling methods and groundwater measurements Part 1 Technical principles for execution.
- British Standards Institution BS EN ISO 5667-1:2023 Water quality. Sampling Guidance on the design of sampling programmes and sampling techniques.
- Building Research Establishment (2005), BRE Special Digest 1: Concrete in aggressive ground.
- Norbury, D. (2010), Soil and Rock Description in Engineering Practice (Caithness: Whittles).
- UK Specification for Ground Investigation 3rd Edition, published by ICE Publishing (2022).

8. Ground Investigation Summary

8.1. Fieldwork Overview

The fieldwork was carried out between 10th October 2023 and 1st November 2023. A site walkover was conducted prior to the first day of the ground investigation and confirmed the anticipated layout of the site.

Up to date utility drawings were procured prior to the site work and can be downloaded using the following link - <u>Statutory Utility</u> Drawings.

A preliminary Unexploded Ordnance (UXO) Risk Assessment for the site was carried out by Brimstone Ltd in accordance with CIRIA C681 Guidelines: 'Unexploded Ordnance, a Guide for the construction Industry' (published in 2009) and is included in the Phase I Desk Study, report ref: 38823-A2SI-XX-XX-RP-Y-0001-00. The report's findings have concluded there to be a potential risk from buried Second World War UXOs on site, and that further research and possibly on site UXO mitigation supervision was required. A

UXO specialist was in attendance during drilling of all exploratory locations. Mitigations included the use of downhole magnetometer testing and a watching brief.

The preliminary UXO risk assessment is presented in Appendix J.

After reviewing all available service information and site reconnaissance, all locations were scanned using Ground Penetrating Radar (GPR) & Electromagnetic (CAT & Genny) techniques, to check for services within proximity to exploratory hole locations.

The exploratory hole locations are located across the lower ground floor and the basement of the site. All exploratory hole depths are presented in metres below ground level (m bgl) however levels m OD are presented in Table 9.1 and the detailed logs presented in Appendix C.

The specific details of the investigation undertaken are discussed throughout Section 8 and the completed scope comprised:

- 2 No. modular cable percussion boreholes; 1 No. to 25.00 m bgl and 1 No. to 3.10m bgl due to refusal in mass concrete.
 - 2 No. boreholes located proximal to pile locations to identify pile underreams.
- 3 No. dynamic sampling boreholes up to 3.00m bgl.
- 3 No. combined machine excavated and hand-dug trial pits to investigate pile cap and pile dimensions, and pile sample.
- 3 No. standpipe installations within the boreholes for ground gas and groundwater monitoring.
- 1 No. geophysical installations for the purpose of parallel seismic testing.
- Appropriate soil sampling.
- Geotechnical in situ testing.
- Geotechnical, geoenvironmental and material laboratory testing.
- Geophysical testing in the form of parallel seismic testing to investigate existing pile depths.
- Monitoring of groundwater levels and ground gas concentrations (3 No. visits over three weeks).

All works were supervised by an experienced ground engineer.

An exploratory hole location plan and detailed exploratory hole logs are presented in Appendices B and C, respectively. The Ordnance Datum levels, which are presented on the exploratory logs have been interpreted from the topographic survey of the site provided by HTS.

8.2. Modular Cable Percussion Boreholes

2 No. cable percussion boreholes (BH01A and BH02) were advanced to a maximum depth of 25.00m below slab level.

The original scope of works included the drilling of 4 No. boreholes, 2 No. of which were for the purpose of determining the depth of potential underream of targeted piles, and a further 2 No. for geotechnical testing and sampling to 30.00m depth and gas and groundwater well installation.

At the location of BH02, the borehole was drilled to 25.00m bgl. The borehole effectively refused at this depth due to encountering challenging ground conditions when progressing the modular drilling rig in granular soils of the Lambeth Group. No underream was encountered during the advancement of BH02 therefore the drilling of a further borehole was not required.

BH01a was progressed until refusal via cable percussion drilling to a maximum depth of 3.10m, and further progressed by diamond coring to a depth of 3.90m below slab level. This was due to limited positioning options on account of two drainage services either side of the pile location and the presence of more than 2.50m of mass concrete around the pile cap. BH01a was positioned in the base of TP01a after other options were attempted. The borehole was chiselled from a depth of 2.50m before refusing at a depth of 3.10m. In an attempt to progress the hole further, a coring methodology was implemented through the centre of the 200mm diameter casing setup at BH01a, which progressed to a maximum depth of 3.90m before refusing. The operator noted a 'drop' in the barrel

from 3.70m – 3.90m depth, indicating a potential void or softer (non-concrete) material – this could not be fully identified due to no recovery of the core from 3.10m to 3.90m depth.

UT100 sampling and SPT/CPT testing were undertaken at alternate 1.00m intervals in cohesive and granular soils until the base of the hole. All soils encountered were logged on site and sub-sampled accordingly for geotechnical and geoenvironmental laboratory analysis.

A 90mm diameter PVC pipe was installed to the base of BH02 for the purpose of parallel seismic testing. The anulus of the pipe was grouted from the base of the hole using a tremeing technique.

BH01 was backfilled using arisings and reinstated to the original condition.

8.3. Modular Dynamic Sampling Boreholes

The dynamic sampling boreholes were progressed using a modular tracked dynamic sampling rig and were advanced to a maximum depth of 4.00m bgl. All of the exploratory hole locations were positioned in the carpark and required diamond coring enabling works using a coring rig. The boreholes were advanced for geotechnical, geoenvironmental and well installation purposes.

At the location of WS01, concrete was encountered to 0.70m bgl and consequently effectively refused. Concrete was similarly encountered to 0.70m bgl at the location of WS01A. A further relocation was undertaken at the location of WS01B, which effectively refused on concrete at 0.70m bgl.

The dynamic sampling borehole was successfully advanced to the scheduled depth of 3.00m bgl at the location of WS02.

WS03 refused at 1.50 bgl due to encountering a potential concrete obstruction. The starter pit was expanded, and a relocation undertaken at WS03A, however refused at 1.50m bgl due to encountering an obstruction.

The location of WS04 was successfully advanced to 1.00m beyond the schedule depth, 4.00m bgl, to determine the depth of natural soil.

Standard Penetration Tests (SPTs) were carried out in the borehole. All soils encountered were logged on site and samples recovered for geotechnical and geoenvironmental laboratory analysis.

A standpipe piezometer was installed in all the successful dynamic sampling hole locations for monitoring of ground gas and groundwater levels.

8.4. Trial Pits

A total of 3 No. combined machine and hand excavated trial pits (TP01a, TP02 and TP02A) were completed to a maximum depth of 2.50m bgl to determine the dimensions of existing pile caps and piles at targeted locations, and also for geoenvironmental sampling. A summary of the findings is presented in Table 8.1.

A probing methodology was implemented using a handheld Hilti drill prior to breaking ground to determine the extent of the pile cap and to inform on the optimum position for the trial pit and borehole.

TP01a was progressed using a combination of concrete coring, machine breaking, hand breaking and insulated hand digging techniques. The lower ground floor slab was encountered to be 190mm thick. Due to encountering mass concrete underlying the slab, a machine excavator and breaker was utilised to break up and excavate the concrete, which was encountered to the base of the trial pit at 2.50m depth. The pile cap was encountered to extend 450mm west of the column, and project 750mm to the south. The base of the pile cap was not established due to mass concrete obscuring the structural concrete. A brick service chamber was encountered at 1.10m bgl with no inspection cover visible at slab level.

As described in Section 8.2, BH02 was positioned in the base of the pit due to the extensive concrete encountered in the vicinity of the target pile. The trial pit log for TP01a presented in Appendix C details the strata encountered to the maximum excavated depth of 2.50m below slab level. The trial pit sketch, also presented in Appendix C, includes the drilling of the borehole for diagrammatic purposes; therefore, includes the maximum drilled depth of 3.90m below slab level. The detailed log for BH01a includes the strata descriptions encountered between 2.50m and 3.90m depth below slab level.

At the location of TP02, a potential service was encountered at 0.50m bgl (leads to the drainage down pipe adjacent to column C38) and was relocated to column C38 – the column immediately north of the original location.

TP02A was excavated to a maximum depth of 2.67m bgl using a combination of machine excavation and hand pitting. The pile cap was encountered to project 220mm in the southern direction, and 260mm in the western direction. A concrete projection, potentially overpour concrete, was encountered at 1.05m depth to 2.30m depth. The pile was encountered at 2.30m bgl and was identified to be approximately 600mm in diameter. A 100mm diameter core sample was obtained from the pile using an angled Hilti coring machine.

No groundwater was encountered during the excavation of each trial pit.

All soils encountered were logged on site. Detailed logs and hand sketches are presented in Appendix C.

Table 8.4 Trial Pit locations

Exploratory Hole Reference	General Findings	Formation encountered	Notes
TP01a	 Pile cap projects 450mm westwards from column edge. Pile cap projects 750mm southwards from column edge. Concrete beam encountered at 1.45m depth spanning north to south. 	Concrete to base of trial pit	Underside of pile cap not established due to mass concrete. Pile not established due to mass concrete.
TP02	Probing indicates concrete extended greater than 3.00m depth. Concrete encapsulated service encountered at 0.50m bgl.	Made Ground	Relocated to Column TP02A (column C38)
TP02A	 Pile cap projects 220mm south from column edge. Pile cap projects 260mm eastwards from column edge. Concrete projection (potentially overspill) at 1.10m depth projecting 700mm west of column edge. Pile encountered at 2.30m depth and is approximately 600mm in diameter. 100mm diameter pile core sample 	Made Ground (principally granular becoming cohesive)	



8.5. Reinstatement

At the locations of the trial pits, the excavations were backfilled using arisings and reinstated as per the original condition, including adding ballast beneath concrete. The surface wearing course of Asphalt was reinstated as per the original condition by a specialist contractor.

8.6. Gas and Groundwater Monitoring Installations

3 No. combined gas and groundwater monitoring pipes were installed (WS02, WS03 and WS04). The monitoring installations comprise of a 50mm internal diameter HDPE casing and well screen. Details are presented in Table 8.6.

Location Ref	Base of Borehole (m bgl)	Installation Diameter (mm)	Type of Installation	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Target Strata
WS02	1.30	50	SP/G	1.00	1.30	Made Ground
WS03A	1.45	50	SP/G	1.00	1.45	Made Ground
WS04	4.00	50	SP/G	1.00	3.30	Made Ground

Table 8.6 Gas and groundwater monitoring installations

Key

SP – Standpipe

SP/G - Standpipe with Gas monitoring valve

PS – Parallel Seismic

9. Ground Conditions

The ground conditions indicate that Made Ground is generally deeper than anticipated and, in the exploratory locations investigated, directly overlies the bedrock geology. As anticipated, the site was encountered to be overlain by hardstanding in the form of asphalt parking bays and concrete floor slabs. Made ground was encountered in all investigation locations, to a maximum depth of 3.70m. The shallow geology encountered adjacent to pile locations was identified to be disturbed/reworked (BH02) or infilled with concrete (BH01a). Between the depths of 3.10m to 4.00m bgl in BH02, reworked River Terrace Deposits and London Clay was encountered, and concrete was encountered to a minimum of 3.70m bgl at BH01a.

The investigation corroborates with published geological records regarding the bedrock geology consisting of the London Clay Formation, underlain by the Lambeth Group. The London Clay Formation was identified to include a thin layer of Weathered London Clay with a maximum thickness of 1.70m overlying brownish grey London Clay. The Upper Mottled Beds of the Lambeth group were encountered to underly the London Clay Formation in BH02 at a depth of 12.95m and consist of mottled sandy silty clay. The underlying beds of the Lambeth Group encountered include the Upper Mottled Beds, Laminated Beds, Upper Shelly Beds and Lower Mottled Beds. The extent of the Lambeth Group was unproven to a maximum depth of 25.00m bgl.

The full set of exploratory hole logs are presented in Appendix C.

Encountered ground conditions are presented in Table 9.1.

9.1. Encountered Geology

The following ground conditions were encountered at the site. Detailed exploratory hole logs are presented in Appendix C. A photographic record is presented in Appendix D.

Unit	Depth (m bgl)	Elevation (m OD)	Strata		Description
	min – max ⁽¹⁾	min – max ⁽¹⁾	Thickness (m)		
	Made Ground 0.00 – 4.00 9.35 – 13.67 1.3			CONCRETE SLAB over firm dark brown gravelly sandy CLAY with low cobble content. Gravel is angular to sub- angular fine to coarse of flint, brick, concrete, white fragments and occasional clinker. Cobbles are angular to sub-angular of brick fragments.	
Made Ground		1.30 – 4.00	Brown locally clayey gravelly fine to coarse SAND with medium cobble content and low boulder content. Gravel is angular to sub-rounded fine to coarse of flint, brick concrete, old wires, and rare carbonaceous fragments. Cobbles are angular to sub-angular of brick and concrete fragments. Boulders are angular to sub- angular of concrete fragments.		
				Mass CONCRETE.	
		Medium dense orangish brown slightly clayey sandy angular to sub-rounded fine to coarse GRAVEL with occasional pockets (<40mm) of brown slightly sandy clay. Sand is fine to coarse. (REWORKED RIVER TERRACE DEPOSITS)			
				Clinker encountered in BH02.	

Table 9.1 Ground conditions encountered

Unit	Depth (m bgl)	Elevation (m OD)	Strata	Description
	min – max ⁽¹⁾	min – max ⁽¹⁾	 Thickness (m) 	
Weathered London Clay Formation	1.30 – 5.00	8.70 – 11.08	0.70 – 1.70 (unproven)	Firm brown and grey mottled sandy silty CLAY with frequent pockets of orangish brown fine and medium sand. Sand is fine and medium.
London Clay Formation ^[2]	5.00 – 12.95	0.75 – 8.70	7.95	Firm extremely closely fissured brownish grey sandy silty CLAY with rare light grey bioturbations (generally <5mm).
		Soft becoming firm brown mottled grey and orangish brown slightly sandy silty CLAY with rare pockets (<5mm) of soft black organic. Sand is fine.		
Lambeth Group: Upper Mottled Beds ⁽²⁾	12.95 – 20.00	0.756.30	7.05	Stiff light bluish grey and brown mottled sandy silty CLAY. Sand is fine and medium.
Lambeth Group: Laminated Beds ⁽²⁾	20.00 - 21.00	-6.307.30	1.00	Stiff extremely closely to closely fissured dark grey slightly sandy silty CLAY with frequent light grey partings of silt.
Lambeth Group: Upper Shelly Beds ⁽²⁾	21.00 – 22.00	-7.308.30	1.00	Stiff bluish grey mottled yellowish brown slightly sandy silty CLAY with occasional pockets (<20 mm) of soft calcrete.
Lambeth Group: Lower Mottled Beds ^[2]	22.00 – 25.00	-8.3011.30	3.00	Stiff bluish grey mottled yellowish brown slightly sandy silty CLAY with occasional pockets (<20 mm) of soft calcrete
				Very dense light bluish grey mottled yellowish brown silty SAND

(1) Depth / elevation refers to top of stratum.

(2) Only encountered in BH02

9.2. Groundwater

Groundwater was encountered in a single location during the investigation, BH02, and constituted two seepages at 9.30m and 10.30m bgl, and one strike at 13.30m bgl. Details are presented in Table 9.2 and also in Appendix C.

 Table 9.2
 Groundwater details

Location Ref	Depth of inflow (m bgl)	Strata / Remarks
BH02	9.30	London Clay Formation / Seepage
BH02	10.30	London Clay Formation / Seepage
BH02	13.30	Lambeth Group / Strike

10. In Situ Testing

10.1. Standard Penetration Testing

Standard Penetration Tests were completed in all cable percussion and dynamic sampling boreholes. The tests were completed in accordance with BS EN ISO 22476-3.

Detailed SPT results are presented in Appendix C.

10.2. Parallel Seismic Testing

The parallel seismic technique operates by directing an elastic wave through a foundation from the surface and recording its arrival time at different depths below the surface. To perform the test a hydrophone is lowered down through a plastic pipe installed next to a pile in increments of 500mm and 1000mm. At each step, the top of the cap above the pile is struck, and the hydrophone records the resultant signal from the moment of impact. As the hydrophone descends, the signal will resolve itself, and the arrival time will gradually increase linearly with the depth. A constant velocity is expected within a concrete pile; typically, this is faster than the velocity of the surrounding sedimentary deposits.

When the hydrophone reaches the base of the pile, the additional signal path is through soil, not steel or concrete, and the first arrival time (FAT) will increase at a greater rate (i.e. the signal takes longer to arrive). The depth of the foundation is determined by the depth at which the rate of first arrival changes, and analysis of the data allows determination of this inflection point and hence the depth to the toe of the pile.

The original scope of works included Parallel Seismic (PS) testing in 2 No. boreholes. Due to encountering concrete to 3.10m depth below slab level during cable percussion drilling of BH01a, and further concrete encountered to 3.70m depth with diamond coring in this location; Parallel Seismic testing was omitted in BH01a. Consequently, 1 No. Parallel Seismic test was conducted to estimate the depth to the pile toe at BH02. The borehole was positioned within 1.00m of the target pile and a sealed HDPE 90mm ID pipe was installed to the base at 25.00m bgl. The pipe was filled with water and the volume surrounding the pipe backfilled with grout, which was introduced to the base of the borehole using a tremie pipe and grout pump.

Testing was carried out on the smooth flat surface of the pile cap directly above the pile with a trial pit adjacent to the borehole. A vibration was induced by striking the top of pile cap with the hammer whilst the hydrophone was lowered in metre increments for the first test and half-metre increments for the second test.

The test data recovered from site and subsequent interpretation present a good correlation of V1 and V2 response speeds and subsequent intersection point showing pile toe depth.

The parallel seismic testing was repeated at the borehole position. The results of the parallel seismic test are summarised in Table 10.3, with the full report presented in Appendix C.

Pile Reference	BH02
Estimated Intersection (pile toe level (m OD))	-2.60
Estimated Pile Length (m)	16.30

Table 10.3Parallel Seismic Survey

10.3. Magnetometer Testing

Magnetometer testing was undertaken in 1 no. borehole location, BH02, to indicate the depth of rebar at the target pile. The original scope of works included magnetometer testing in 2 No. locations; however, due to encountering concrete to a maximum depth of 3.70m in BH01a, geophysical installation and magnetometer testing was not undertaken in this location.

Magnetometer testing was undertaken using a magnetometer probe, lowered at a steady rate down a 90mm diameter PVC installation pipe with measurements taken continuously to the base of the installation.

In the location of BH02, the magnetometer probe detected a strong signal to a depth of 9.80m, thereafter with the signal decreasing in strength. At a depth of 10.70m depth below slab level, no reading was detected. A total of 2 No. tests were undertaken with the same result.

11. Laboratory Testing

11.1. Geotechnical Laboratory Testing

Geotechnical laboratory testing was undertaken by GSTL Limited, a United Kingdom Accreditation Service (UKAS) accredited laboratory, in accordance with relevant standards.

The following type and number of tests scheduled are presented in Table 11.1. The results are presented in Table 11.2 and detailed results are presented in Appendix E.

Table 11.1 Geotechnical laboratory testing summary

Test description	Number of tests		
Natural moisture content BS 1377:1990 - Part 2 : 3.2	10		
4 Point Liquid and Plastic Limit BS 1377:1990 - Part 2: 4.3 and 5.3	10		
Suite D (brownfield, pyrite present) ⁽¹⁾	3		
Quick Undrained Triaxial – 100mm or 38mm single stage BS 1377:1990 - Part 7 : 8	10		

(1) Includes pH, water & acid soluble sulphate, total sulphur, magnesium, chloride and nitrate

(2) Includes pH, water soluble sulphate, total sulphur, acid soluble sulphate

Table 11.2 Summary of the geotechnical laboratory test results

Strata	Parameter	Value (min -max)
Made Ground	Water Soluble Sulphate (mg/L)	249 - 5420
Made Ground	рН	7.5 – 9.8
Weathered London Clay Formation	Moisture Content	30 - 40
	Plasticity Index	52

-		
Strata	Parameter	Value (min -max)
	Moisture Content (%)	25 - 37
	Plasticity Index (%)	39 - 59
London Clay Formation	Undrained Shear Strength (kPa)	32 - 106
	Water Soluble Sulphate (g/L)	47 - 1150
	pH	7.7 – 9.0
	Moisture Content (%)	18 - 29
Lambeth Group: Upper Mottled Beds	Plasticity Index (%)	27 - 39
	Undrained Shear Strength (kPa)	64 - 150
	Moisture Content (%)	31

11.2. Geoenvironmental Laboratory Testing

Lambeth Group: Laminated Beds

Lambeth Group: Upper Shelly Beds

Lambeth Group: Lower Mottled Beds

Selected soil and groundwater samples were sent for geoenvironmental laboratory testing which was undertaken by Derwentside Environmental Testing Services (DETS), a United Kingdom Accreditation Service (UKAS) accredited laboratory. The following type and number of tests scheduled is presented in Tables 11.3 and the results are presented in Appendix F.

Plasticity Index (%)

Moisture Content (%)

Undrained Shear Strength (kPa)

Moisture Content (%)

Plasticity Index (%)

Table 11.3	Geoenvironmental	testing - soil
------------	------------------	----------------

Test description	Number of tests
A2SI RA Suite ⁽¹⁾	5
Volatile Organic Compounds	1
Full Waste Acceptance Criteria	2
PCB WHO12	1

67

12

142

22

33 - 42



 A2SI Risk Assessment Suite includes: Asbestos Identification, Metals, Anions. Inorganics, Fraction of Organic Carbon, pH, Soil Organic Matter, Total Organic Carbon, Polyaromatic Hydrocarbons (PAH16-MS), VPH/EPH (TPH CWG incl BTEX); Speciated Phenols by HPLC or GCMS, Total Cyanide, Sulphide (acid soluble), Sulphate (water soluble)

11.3. Concrete Core Testing

A 100mm diameter concrete core sample was obtained from the pile exposed in TP02A. The original scope of works included the sampling of 2 no. cores, however, due to encountering mass concrete at the location of TP01a, core sampling was omitted at this location.

Results of the compressive strength, density and depth of carbonation testing for the core sample of the pile located at TP02A, are presented in Appendix G.

12. Gas and Groundwater Monitoring

3 No. rounds of gas and groundwater monitoring visits were undertaken between 8th and 21st November 2023. A summary is presented in Tables 12.1 & 12.2 The results are presented in Appendix H.

12.1. Ground Gas Monitoring

Gas monitoring was undertaken using a calibrated Gas Data GFM436 hand-held gas analyser and a calibrated MiniRae Lite ATEX Photo Ionisation Detector (PID) with a 10.6eV lamp and a summary is presented in Table 12.1.

Table 12.1 Summarised ground gas monitoring results

Exploratory hole reference	Minimum steady O₂ (%)			Maximum steady LEL (%)	H₂S (ppm)	CO (ppm)	Maximum PID (ppmv)
WS02	20.00	0.10	0.00	0.00	0	0	0.00
WS03	19.70	0.10	0.00	0.00	0	0	0.00
WS04	19.80	0.10	0.00	0.00	0	0	0.00

The monitoring programme includes 2 No. rounds during falling atmospheric pressure conditions. The atmospheric pressure recorded during each visit is presented in Table 12.2.

Table 12.2 Atmospheric pressure trends

Date (dd/mm/yyyy)	Time (hh:mm)	Atmospheric pressure reading
08/11/2023	09:14	1000
08/11/2023	10:32	999
15/11/2023	09:42	1000
15/11/2023	12:10	1003
21/11/2023	09:18	1005

Date (dd/mm/yyyy)	Time (hh:mm)	Atmospheric pressure reading
21/11/2023	13:52	1000

12.2. Groundwater Monitoring

The groundwater levels and any free phase liquids were measured using a calibrated Geotech Oil/Water Interface meter. Groundwater levels were recorded in the monitoring wells during the monitoring visits and the results are presented in Table 12.3.

Table 12.3	Groundwater	monitoring results	5
------------	-------------	--------------------	---

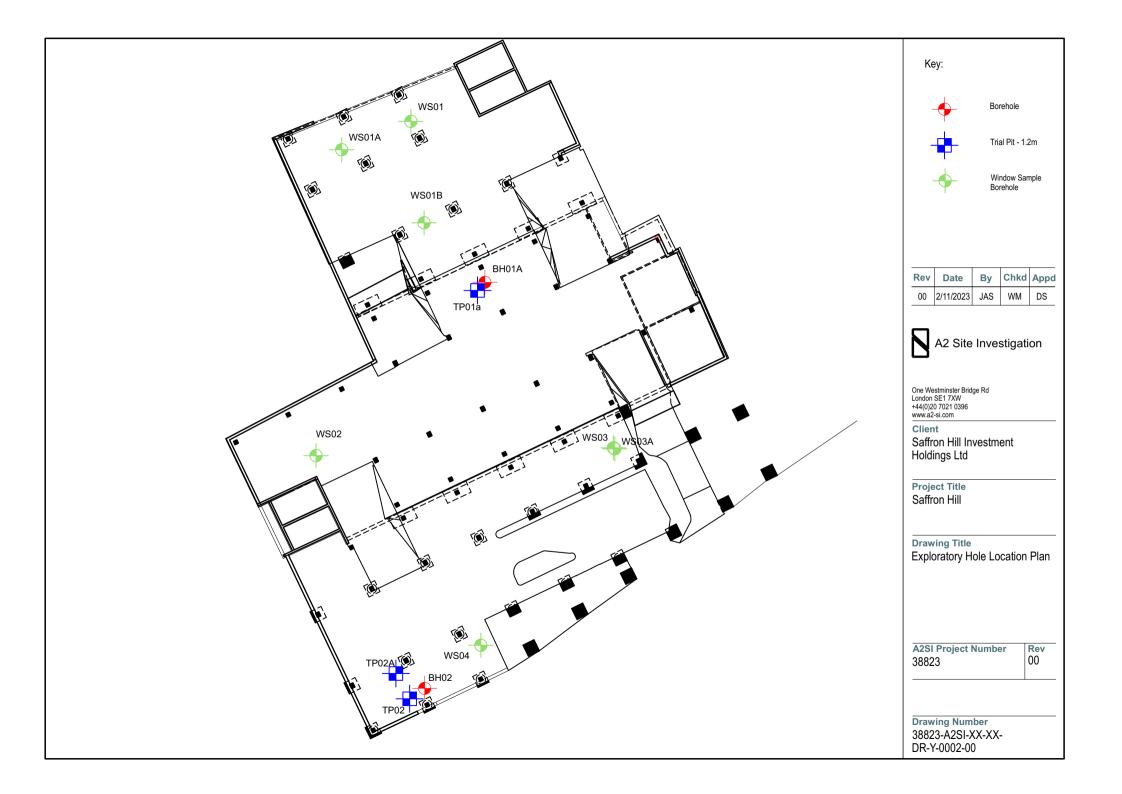
Exploratory hole reference	Depth of monitoring well (m bgl)	Round 1 08/11/2023 (m bgl)	Round 2 15/11/2023 (m bgl)	Round 3 21/11/2023 (m bgl)	Notes
WS02	3.00	Dry	Dry	Dry	No free phase product detected
WS03	1.45	Dry	Dry	Dry	No free phase product detected
WS04	4.00	Dry	Dry	Dry	No free phase product detected

12.3. Groundwater Sampling

All sampling locations were reported as 'dry' during monitoring rounds; therefore, no water was sampled for geo-environmental analysis.

Location ID	Туре	Final Depth (m bgl)	Level (mOD)	Installation Depth (m)	Installation Response Zone (m)
BH01a	Cable Percussion	3.90	12.45	N/A	N/A
BH02	Cable Percussion	25.00	13.70	25.00	N/A
WS01	Dynamic Sampling	0.70	13.73	N/A	N/A
WS01A	Dynamic Sampling	0.70	13.75	N/A	N/A
WS01B	Dynamic Sampling	0.70	13.58	N/A	N/A
WS02	Dynamic Sampling	3.00	12.38	1.30	1.00 – 1.30
WS03	Dynamic Sampling	1.50	13.52	N/A	N/A
WS03A	Dynamic Sampling	1.45	13.52	1.45	1.00 – 1.45
WS04	Dynamic Sampling	4.00	13.69	3.00	1.00 – 3.30
TP01a	Trial Pit	2.50	12.45	N/A	N/A
TP02	Trial Pit	1.00	13.70	N/A	N/A
TP02A	Trial Pit	2.67	13.70	N/A	N/A

Appendix B: Exploratory Hole Location Plan





Appendix C: Exploratory Hole Logs, Trial Pit Sketches and In Situ Testing Results

	A2 Site Investigation Borehole Log														
Project		ron H	ill											Borehole BH	^{∍ No} 101a
Job No	38873 12 / 5 5								tes (Local Grid) 531434.0	0 N 1819	956.0	0	Depth (r 3	ⁿ⁾ .90	
Client													Status		
	Saff	ron H	ill Inve	estme	ent Ho	ldin	gs Ltd							FI	NAL
			Standa	ard Pe	netratio	on Te	est Summ	nary		י ר ו	Installatio	n / Inst	rumen	t Detail	s
Test Type	Depth Top	Depth Casing			N60 Value			Reported Re	sult	Date	Instr. Type	To (m)	Respons	e Zone (m) Remarks
										Depth (m	hiselling		VV Fro	ater Ac	To
											Gei le scanned with	neral R			delling
	Drilling	Progre		ing P Wat		s an Cas	d Backfi	ll Bac	kfill	2. UXO E	ngineer in atter le positioned in	ndance.			-
Dat 10/20/2 10/20/2	ie 2023	Time 08:30 02:00	Depth (m 2.40 3.10		(m) Dep		Dia (mm) 200	Depth (m) 0.00 - 0.03 0.03 - 0.22 0.22 - 0.32 0.32 - 3.90	Backfill Asphalt Concrete ballast Arisings	2.40m bbl 4. Boreho methodole unable to 4. No grou	I. le terminated a ogy undertaken be retrieved). undwater encou le backilled wit	at 3.10m de n from 3.10 untered.	epth on co)m to 3.90	oncrete. Co Im depth (oring core
										Keys					
				Wat	er Obse	ervat	ions			AZCL:Assumed Zo U - 100mm Diamet UT - 100mm Diamet U38 - 38mm Diame D - Disturbed Sam LB - Large Bulk Sa	I Sample (Tub, Vial, Jar) ine of Core Loss ier Undisturbed Sample eter Thin Wall Undisturbed ster Undisturbed Sample, bel, B-Bulk Sample, mple, BLK-Block Sample N-Water Sample, R-R-Rot	ed Sample	SPG/GW - Gas VWP - Vibrating ICM - Inclinome Hole Type IP - Inspection CP - Cable Per	be Piezometer dwater Monitor S	fonitor Standpipe r T - Trial Trench
Da	ate/Time	Dep	oth Strike (-	Elapsed (min)	Depth Sealed (n	Rose To (m)	TESTS S/C-SPT / CPT, V-	Shear Vane, PP-Pocket F robe, VOC-Volatile Orga	Penetrometer,	Rotary/Sonic DS - Dynamic S Rotary	Sampling, DS/R-I	Dynamic Sampling /

All dimensions in metres	Contractor
Scale 1:50	

Method C

Project Saffron Hill					Borehole No BH01a
38823	tart 20/10/20	10 / 5	Co-Ordinates (Local Gri E 531434		0 3.90
Saffron Hill In	nvestment H	Ioldings Ltd	SPT Energy Ratio %	Sheet 1 of 1	FINAL
SAMPLES & TEST		Christian	Description	Depth Reduce	Sackfill Backfill
Depth (m) Type No - - -	to V E a n (I	ight grey CONCRETE. 55-65% a o coarse of flint and type-1 mater With occasional voids <4mm dian BASEMENT SLAB) Extremely weak light grey CONCI angular to well rounded fine to co naterial. Matrix is fine to coarse s MASS CONCRETE)	ial. Matrix is fine and mediun neter. RETE. 50-70% aggregate of arse predominantly of flint an and size.	(thickness) Level led fine n sand. sub- d type-1 (2.91) 3.10 9.35 (0.60) 0.75 0.00 12.26 0.19 12.26 0.19 0.25 0.00	
All dimensions in metres Scale 1:50	A2 S	ite Investigation	Method Cable P	ercussion	JAS Approved by JE

	A2 S	ite	Inves	tigatic	on					Bore	ehole	Log
Project	Saffro	n Hi									Borehole	
Job No	Game		Start	12/10	/2023	Ground Le	vel (mOD)	Co-ordinate	s (Local Grid)		Depth (m	102
3	38823		End		/2023		13.70	E 5		.00		
Client	Saffro	n Hil	ll Inves	stment	Holdir	ngs Ltd				Status FIN	Status FINAL	
			Standar	d Penet	ration T	est Sumn	narv		Installatio	n / Instrur	nent Details	
S S C S S S S S S S S S S S S S S		epth asing		rnetratio n Total N60 1 1 1 1 1 1 1 1 1 3 3 3 3 3 3	Value N Val 9 8 3 7 0 9 1 10 7 15 5 13 9 17 4 30		Reported Ress N=8 (1,2/2,2,2 N=7 (1,2/1,2,2 N=10 (2,2/2,2,2 N=15 (2,3/3,4,4 N=13 (2,2/3,3,4 N=17 (2,3/4,4,4 N=30 (3,4/5,8,8 N=34 (5,6/8,8,9,10 N=38 (6,9/8,9,10	2) ,2) ,3) 2,4) 4,4) 4,3) 4,5) 3,9) 3,9) 9,9)	Date Instr. Type 12/10/2023 SP	sponse Zone (m)	-	
S	20.50 22.50			4	8 43	N=	=43 (10,15/10,10 50 (10,12/50 for 2	,11,12) 265mm)	Chicolling	Water Ad	dod	
5	24.50					0	(75 for 60mm/0 fo	or Umm)	Omm) Chiselling N Depth (m) Duration F			To 3.20
									Ge 1. Borehole scanned w	eneral Rem		Irilling
D	Drilling P	rogres		ng Prog Water		nd Backfi sing	II Back	cfill	2. UXO Engineer in atte 3. Borehole terminated	endance.		Ū
Date 10/12/2 10/12/2 10/13/2 10/13/2 10/16/2 10/16/2 10/16/2 10/16/2 10/17/2 10/17/2	023 01 023 03 023 04 023 04 023 04 023 04 023 04 023 04 023 04 023 02 023 02 023 03 023 04 023 04 023 04 023 04 023 04 023 04 023 04	me I :00 :00 :30 :30 :50 :30 :45 :00 :30	Depth (m) 1.50 2.50 3.00 12.00 12.50 17.50 18.50 19.50 20.50 23.50 24.50	Depth (m) 3.2 17.3 18.4 19.3 20 23.1 23.5	Depth (m 4.50) Dia (mm) 200	Depth (m) 0.00 - 0.30 0.30 - 1.00 1.00 - 25.00	Backfill Concrete Arisings Grout	dense sand. 4. Groundwater seepag depth, and groundwate 5. Borehole backilled w condition. Keys SAMPLES EXECTANEMENT Sample (Tub, Vial. J. EXECTANEMENT Sample (Tub, Vial. J. EXECTANEMENT Sample (Tub, Vial. J. U: 00mm Diameter Undistuded Sampl UT - 100mm Diameter Thin Vial Undiatured Sampl UT - 100mm Diameter Thin Vial Undiatured Sampl U: 9.00mm Diameter Thin Vial Undiatured Sampl Samples Samples	r strike encount ith arisings and r) INSTA r) SPIE r) SPG SPG bed Sample VWP	ered at 13.30m o reinstated as pe	depth . r original
		I	Į	Water C) bserva	tions	1		D - Disturbed Sample, B-Bulk Sample, LB - Large Bulk Sample, BLK-Block Sam C - Core Sample, W-Water Sample, R-Re	ble IP - In ot Sample CP - C Rotan	spection Pit, TP-Trial Pit TT Cable Percussion, RC-Rotar y/Sonic	y Coring, R/S-
Dat	te/Time	Dept				e Elapsed (min)		Rose To (m)	TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pockk MP - Mackintosh Probe, VOC-Volatile Or	DS - É t Penetrometer, Rotary panic Compound DC -D	ynamic Sampling, DS/R-D	
			9.30 10.30 13.30				4.50 4.50 4.50					

Method C



roject Saff	ron Hill								Во	BH02
ob No 3882	23		/2023	Ground Level (mOD)	Co-Ordinates (Local G E 531427	,	N 1819	27 00		epth (m) 25.00
		End 18/10	/2023	10.10		Sheet		27.00		atus
Saff	ron Hill	Investment	t Holdin	gs Ltd	SPT Energy Ratio %		heet 1	of 3	U.	FINAL
SA	MPLES & TE	ESTS Test		Stratum	Description		Depth	Reduced	Water	Legend Legend
Depth (m)	Type No	Result					(thickness)	Level	3	Instr
0.30 - 0.60 0.30 0.40 0.80 - 1.20 0.80 1.20 1.20 - 1.50 1.20 1.50 - 1.95 1.50 2.00	PID B 1 PID ES 2 PID B 3 PID B 4 ES 5 SPT SPT (D) 6 PID	VOC 0ppm VOC 0ppm VOC 0ppm VOC 0ppm N=8 (1,2/2,2,2,2) VOC 0ppm	to coarse of With occas (LOWER of BALLAST. (MADE GF Firm dark is angular fragments of brick. (MADE GF 0.80 to 1.200	of flint and type-1 materia sional voids <4mm diam GROUND FLOOR SLAB ROUND) brown gravelly sandy CL to sub-angular fine to co and occasional clinker. (ROUND) n with increasing sand) AY with low cobble conten varse of flint, brick, concrete Cobbles are angular to sub	m sand.	0.00 - (0.20) - (0.10) - 0.30 - - - (2.40) - - - - - - - - - - - - - - - - - - -	13.50 13.40		
2.00 - 2.50 2.00 2.50 - 2.95	B 7 ES 8 SPT	N=7 (1,2/1,2,2,2)	2.50 to 3.10n	n with increased flint g	ravel content					
2.50 3.50 - 3.95 3.50	SPT (D) 9 SPT SPT (D) 10	N=9 (1,2/2,2,2,3)	Red BRIC and COBE (MADE GF Medium de rounded fil brown slig (REWORF Firm brown	K recovered as angular f LES. ROUND) ense orangish brown sar ne to coarse GRAVEL wi htly sandy clay. Sand is ED HACKNEY GRAVEL n slightly sandy silty CLA	to sub-angular sandy brick ndy slightly clayey angular i ith occasional pockets (<40 fine to coarse. MEMBER) Y with frequent partings of	to sub- 0mm) of	2.70 (0.40) 3.10 (0.30) 3.40 (0.60)	11.00 10.60 10.30		
4.00 4.50	D 11 UT 12		gravel. Sa (REWORK Firm brown orangish b	nd is fine to coarse. ED WEATHERED LON n and grey mottled sand	y silty CLAY with frequent p and. Sand is fine and medi	ockets of	4.00	9.70		
5.00	D 13		rare light g		ownish grey sandy silty CLA ally <5mm). Sand is fine.	AY with	5.00	8.70		
5.50 - 5.95 5.50	SPT SPT (D) 14	N=10 (2,2/2,2,2,4)	5.50 to 12.95	im becoming stiff mice	aceous					
6.00 6.00	PID ES 15	VOC 0ppm								
6.50 - 6.95	UT 16	Ublow= 39								
7.00	D 17			n with occasional ang I white shells	ular to sub-angular fine grave	el size				
7.50 - 7.95 7.50	SPT SPT (D) 18	N=15 (2,3/3,4,4,4)								
8.00	D 19		8.00 to 9.00n	n with occasional poci	kets (<10mm) of brown silt					
8.50 - 8.95	UT 20	Ublow= 42								
9.00 9.00 9.00	PID D 21 ES 22	VOC 0ppm		m fissures becoming of orangish brown fine sa	extremely closely to very clo nd	sely spaced	(7.95)			
9.50 - 9.95 9.50	SPT SPT (D) 23	N=13 (2,2/3,3,4,3)	9.50 to 12.95	im with occasional po	_ ckets (<30mm) of very sandy	v silty clay.				
10.00	D 24				Γ		_			
All dimensions	in metres 50	Contractor A2	2 Site Inv	estigation	Method Cable P	ercussi	on	Log	iged By JAS	Approved by



Project Saff	ron Hill								Bo	orehole No BH	02
Job No		Start 12/10	/2023	Ground Level (mOD)	Co-Ordinates (Local Gri	id)			Dr	epth (m)	
3882	23		/2023	13.70	E 531427	1 00.	N 1819	27.00		25.	00
Client Saff	ron Hill	Investmen	t Holdin	gs Ltd	SPT Energy Ratio %	Sheet S	heet 2	of 3	St	tatus FIN	AL
	MPLES & TE			0							- ent
Depth (m)	Туре	Test		Stratum	Description		Depth (thickness)	Reduced Level	Water	Legend	instrumer / Backfill
_	No	Result			ownish grey sandy silty CLA	Y with	-			-	<u> </u>
-				grey bioturbations (gener I CLAY FORMATION)	rally <5mm). Sand is fine.						
10.50 - 10.95	UT 25	Ublow= 58		,			-				
-							=				
	D 26										
_							=				
- - 11.50	SPT	N=17									
11.50	SPT (D) 27	(2,3/4,4,4,5)					-				
- 12.00	PID	VOC 0ppm									
12.00 12.00	D 29 ES 28						-				
12.45 - 12.90 - 12.50	SPT (D) 30 SPT	N=30									
		(3,4/5,8,8,9)					=				
13.00	D 31				ottled sandy silty CLAY. San	d is fine	12.95	0.75			
-			and mediu (LAMBET	ım. H GROUP: UPPER MO1	TTLED BEDS)						
- 13.50	UT 32	Ublow= 41	,		,		-				
-											
_ 14.00	D 33		14 00 to 15 (00m becoming light bl	uish arey mottled brown						
-			14.00 10 10.0								
_ 14.50	SPT	N=33									
14.50	SPT (D) 34	(5,7/8,8,8,9)									
15.00	D 36		15.00 to 16.0	20m becoming brown	_ mottled light grey and reddish	brown					
15.00	ES 35				<u>15 mm) of reddish brown silt.</u>	DIOWIT					
_ —15.50 - 15.95	UT 37	Ublow= 62									
-											
	D 38		16.00 to 20.0	00m becoming sandy	_						
-			10.00 10 20.0	John becoming sandy							
_ —16.50 - 16.95	SPT	N=34					(7.05) _				
16.50	S 39	(5,6/8,8,9,9)									
- 17.00	D 40										
-											
_ —17.50 - 17.95	UT 41	Ublow= 81									
-							-				
	D 43		18 00 to 19	50m - with frequent poo		in sandu					
18.00	ES 42		silty clay	oom with hequent poc	-	sanuy					
_ —18.50 - 18.95	SPT	N=38	μ				_				
18.50	S 44	(6,9/8,9,10,11)									
- 19.00	D 45		10.00 to 20.4	00m - with pockate (-EC	 mm) of light bluish grey silty (clay/clayor					
-			silt		, many or light bluish grey slity (ciay/ciayey					
 19.50 - 19.95	UT 46	Ublow= 100					_				
-	-						=				
20.00	D 47						20.00-	-6.30			
		Contractor			Method				gged By		oved by
All dimensions Scale 1:	in metres	Contractor A2	2 Site Inv	restigation	Cable Pe	ercussi	on	LO	JAS	Appro	JE



Project Saff	ron Hill									Bor	ehole No BH	02
Job No		Start 12/10	/2023	Ground Level (mOD)	Co-Ord	inates (Local Gr	rid)			Der	oth (m)	
3882	2			13.70		531427	,	N 1819	27 00		25.	00
0002	.0	End 18/10	/2023	15.70		2 331427:00 11 101927:0					20.	00
Client Saff	ron Hill	Investmen	t Holdir	ngs Ltd	SPT Er	nergy Ratio % 67	Sheet S	heet 3	of 3	Stat	^{tus} FIN	IAL
SA	MPLES & T	ESTS								5		ent
Depth (m)	Туре	Test		Stratum	Description			Depth (thickness)	Reduced Level	Water	Legend	Instrumer / Backfill
_	No	Result	Stiff extre	mely closely to closely fis	sured dark or	ev slightly sar	ndv siltv	(0.20) _				
_			CLAY wit	h frequent light grey parti	ngs of silt.	-,		20.20 -	-6.50	-		
- 	SPT	N=43		H GROUP: LAMINATED		d is fine.	/					
20.50	S 48	(10,15/10,10,11,1		TH ĞRÓUP: LAMINÁTED				(0.80) -				
-		2)										
21.00 - 21.00	D 50 ES 49			grey locally greyish black				21.00-	-7.30			
	_		is fine.	o sub-angular fine to coar	se gravel size	e shell fragmei	nts. Sand	-				
21.50 - 21.95	UT 51	Ublow= 100	(LAMBET	TH GROUP: UPPER SHE	LLY BEDS)			(1.00) -				
-			21.20 to 22.	00m shells becoming a	asundant			-				
- 22.00	D 52		0// 11 / 1	L			AX/. 12	22.00-	-8.30			
-			occasion	h grey mottled yellowish I al pockets (<20 mm) of so	orown slightly oft calcrete.	sandy silty CL	lay with	-				
-	0.07	N-50 (40 40/50		I GROUP: LOWER MOT								
-22.50 - 22.95 22.50	SPT S 53	N=50 (10,12/50 for 265mm)										
-												
23.00	D 54											
-								(2 70) -				
- -23.50 - 23.70	UT 55	Ublow= 100						(2.70) _				
23.75	D 56							-				
24.00	D 57							-				
24.00 	0.57							-				
-								-				
- 24.50	SPT	0 (75 for 60mm/0 for 0mm)										
-		101 01111		se light bluish grey mottle	d yellowish bi	rown silty fine	and	24.70 - (0.30) -	-11.00			
-			medium S	FAND TH GROUP LOWER MOT	TLED BEDS)	/		-11.30	r		
-				End of Bore	hole at 25.00m	1		-				
-												
_								-				
-								-				
-								-				
-								-				
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-								=				
-								-				
All dimensions		Contractor) Sita In	voctigation	Method	Cable P			Log	iged By	Appro	oved by
Scale 1:		A2	Site In	vestigation			ercussi			JAS		JE
					1							

A2	2 Site I	nvest	tigatior	n				E	Boreh	ole	Log	
Project Saf	fron Hill									Borehole	No 501	
Job No	_	Start	23/10/2	2023	Ground Level (mOD)	Co-ordinates				Depth (m		
3882	23	End	23/10/2	2023	13.73	E 53	31423.00	N 181973	3.00	0.	70	
Client	Saffro	on Hill	Investn	nent H	Holdings Ltd					Status FIN	Status FINAL	
	S	tandar	d Penetra	ition Te	est Summary		Ins	stallation / I	nstrument	Details	6	
Test Type	Depth Top	Depth Ca	asing Depth Water	N Value	Reported Result		Date	Instr. Type To	(m) Response	e Zone (m)	Remarks	
							Dynamic S	Sampling F	Runs			
							Depth Top	Dia. (mm)	Rec. %		Remarks	
Drillin Date	g Progress Time D	Borin epth(m)	Hole Dian			-						
								Conor	al Remarks			
							2. UXO Engli 3. Borehole to extensive con 4. No ground	canned with GP neer in attendanc erminated at 0.70	R, CAT & Genr ce. 0m blgfl due to ed.	ny prior to d encounteri	ing	
			Water Ob	servat	tions							
Date/Time	e Depth	Strike (m)) Depth Casing	(m) Time	Elapsed (min) Depth Sealed (m)	Rose To (m)						
			1				Keys					
							SAMPLES ES - Environmental Sam AZCL'Assumed Zone of U - 100mm Diameter TU UB - 38mm Diameter U UB - Disturbed Sample, B LB - Large Builk Sample, C - Core Sample, W-Wa TESTS S/C-SPT / CPT, V-Sheat	Core Loss disturbed Sample hin Wall Undisturbed Sample ndisturbed Sample -Bulk Sample,	SPG/GW - Gas ICM – Incinome ICM – Incinome Hole Type IP -Inspection P CP -Cable Perc Rotary/Sonic DS -Dynamic S: neter, Rotary	e Piezometer water Monitor Sta / Groundwater Mu / Wire Piezometer ster it, TP-Trial Pit TT ussion, RC-Rotary ampling, DS/R-Dy toring, CP/R-Cable	- Trial Trench y Coring, R/S-	



Saffron H	ill						Borehole No WS01
[№] 38823		0/2023 0/2023	Ground Level (mOD)	Co-Ordinates (Local Gr E 531423		N 181973.00	Depth (m) 0.70
^{tt} Saffron H	ill Investmer	nt Holding	ıs Ltd	SPT Energy Ratio %	Sheet	Sheet 1 of 1	Status FINAL
SAMPLES 8	TESTS Test	_	Stratum De	escription		Depth Reduced	Legend Legend
epth (m)	Result	of flint and t	ype-1 material. Matrix is voids <4mm diameter. ROUND FLOOR CONCF	ngular to rounded fine to fine and medium sand. W RETE SLAB)	coarse líth	(thickness) Level	
			End of Boreho	ale at 0.70m		(0.51)	
						-	
						-	
dimensions in metres Scale 1:50	Contractor	2 Site Inve	estigation	Method Dynamic	c Sam		By Approved by AS JE

A2	Site lı	nvest	tigatio	n					Boreh	ole	Log
Project Saf	fron Hill									Borehole	No 01A
Job No		Start	23/10/2	2023	Ground Level (mOD)	Co-ordinates			_	Depth (m	
3882	23	End	23/10/2	2023	13.75	E 53	31419.00	N 18197	2.00	0.	70
Client	Saffro	on Hill	Investr	nent ŀ	Holdings Ltd					Status FIN	NAL
	S	tandar	d Penetra	ation Te	est Summary		Ins	stallation /	Instrument	Detail	S
Test Type	Depth Top	Depth Ca	asing Depth Water	N Value	Reported Result		Date	Instr. Type To	o (m) Response	e Zone (m)	Remarks
							Dvnamic	Sampling F	Runs		
							Depth Top	Dia. (mm)			Remarks
Drillin Date	g Progress Time D	Borir epth(m)	Hole Diar								
								Gapor	al Remark		
							 UXO Engi Borehole t extensive co No ground 	scanned with GF neer in attendan terminated at 0.7	PR, CAT & Genr ice. 70m blgfl due to red.	ny prior to d encounteri	ing
			Water Ob								
Date/Time	e Depth	Strike (m) Depth Casing	(m) Time	Elapsed (min) Depth Sealed (m)	Rose To (m)					
							Keys				
							SAMPLES ES - Environmental San AZCL-Assumed Zone of U - 100mm Diameter T U38 - 38mm Diameter T D - Disturbed Sample, E LB- Large Bulk Sample C - Core Sample, W-We TESTS S/C-SPT / CPT, V-Shea	f Core Loss ndisturbed Sample Fhin Wall Undisturbed Sam Jndisturbed Sample 3-Bulk Sample,	SPG/GW - Gas ple VWP - Vibrating ICM – Inclinome Hole Type IP -Inspection P CP -Cable Perc Rotary/Sonic DS -Dynamic S: pometer, Rotary	e Piezometer dwater Monitor Sta / Groundwater Mu / Wire Piezometer ster it, TP-Trial Pit TT ussion, RC-Rotary ampling, DS/R-Dy coring, CP/R-Cable	- Trial Trench y Coring, R/S-



Saffron Hill								Borehole No	01A
38833		/2023 /2023	Ground Level (mOD)	Co-Ordinates (Local Gr E 531419		N 181972	2.00	Depth (m)	70
Saffron Hill	Investmen	t Holding	js Ltd	SPT Energy Ratio %	Sheet	Sheet 1 of	1	Status FIN	JAL
SAMPLES & TE			Stratum De	scription			luced at	Legend	Instrument / Rackfill
Depth (m) Type No	Test Result	to coarse of With occasi	CONCRETE. 55-65% agg flint and type-1 material. onal voids <4mm diamete ROUND FLOOR SLAB) E.	regate of angular to round Matrix is fine and mediur	ded fine n sand.	0.00 (0.19) -	avel ≩		nusul
			End of Boreho	le at 0.70m		13	8.05		
						-			
I dimensions in metres	Contractor	2 Site Inve	N	^{1ethod} Dynamic			Logged I	By Appr	roved by

	2 Site	Invest	igatio	n						Bo	oreh	ole	Log
Project Sat	fron Hi	II										Borehole WS	No 01B
Job No	1 2	Start	23/10/2			evel (mOD) 13.58		s (Local Grid) 31422.0	0 NI 101	060 (5	Depth (m	¹⁾ 70
300	23	End	23/10/2	2023		13.38	ED	31422.0		969.0	0		70
Client	Saffr	on Hill	Investn	nent F	Holding	s Ltd						Status FII	NAL
		Standar	d Penetra	ation Te	est Sumr	nary			nstallatio	n / Ins	trument	t Detail	s
Test Type	Depth To	p Depth Ca	asing Depth Water	N Value		Reported Result		Date	Instr. Type	To (m)	Respons	e Zone (m)	Remarks
С	0.70				0 (;	20 for 0mm/0 for 0r	nm)						
									D	dia O au			
								Depth To	-	(mm)	Rec. %		Remarks
Drillin Date	ng Progress Time		ng Progre Hole Diar Depth(m)		d Backfi Casin Depth (m) Di	ig Ba							
								2. UXO E 3. Boreho extensive 4. No grou	le scanned wi ngineer in atte le terminated concrete. undwater enco le backilled w	th GPR, C endance. at 0.70m ountered.	blgfl due to	ny prior to c encounter	ing
Data/Tim	Don		Water Ok) Depth Sealed (m)	Bass To (m)						
Date/Time	e Dep	th Strike (m)		(m) Time	Elapsed (min,) Depth Sealed (m)	Rose To (m)						
								AZCL: Assumed Zo U - 100mm Diamet UT - 100mm Diamet U38 - 38mm Diamet D - Disturbed Sam LB- Large Bulk Sa C - Core Sample, V TESTS S/C-SPT / CPT, V-1	I Sample (Tub, Vial, Jane of Core Loss er Undisturbed Sample ter Thin Wall Undistur ter Undisturbed Sample, De, B-Buik Sample, R-Rc U-Water Sample, R-Rc Shear Vane, PP-Pocke Shear Vane, VOC-Volatile Org	ped Sample le ole ot Sample t Penetrometer,	SPG/GW - Gas VWP - Vibrating ICM – Inclinom Hole Type IP -Inspection F CP -Cable Perc Rotary/Sonic DS -Dynamic S Rotary	be Piezometer dwater Monitor St / Groundwater M y Wire Piezometer eter Pit, TP-Trial Pit TT uussion, RC-Rotar ampling, DS/R-Dy Coring, CP/R-Cabl	onitor Standpipe - Trial Trench y Coring, R/S- mamic Sampling /

All dimensions in metres Scale 1:50 Contractor A2 Site Investigation Method Dynamic Sampling Logged by Approved by JE



Saffron Hill								Borehole No	01B
^{b No} 38823	Start 23/10/2 End 23/10/2	2020	evel (mOD) 13.58	Co-Ordinates (Local Gri E 531422		N 18196	9.00	Depth (m)	70
Saffron Hill	Investment	Holdings Lto	1	SPT Energy Ratio %	Sheet S	sheet 1 c	of 1	Status FIN	VAL
		Light grey CONCRE	Stratum Des TE. 55-65% aggr type-1 material. Is <4mm diamete	78 cription egate of angular to round Matrix is fine and medium r.	S	Depth (thickness) R 0.00 (0.19) - 0.19 - - (0.51) - - - -		EIN Legend	JAL Instrument
	Contractor			ethod		_	Logged		roved by

A2	2 Site I	nves	tigatio	n							Bo	oreh	ole	: Lo	bg
Project Saf	fron Hil	I												ole No VSO	2
Job No 3882	23	Start End	23/10/2 23/10/2		Ground Level (1 12.5		Co-ordinate		II Grid) 22.00	N 1819	940.0	0	Depth	(m) 3.00)
Client	Saffr	on Hill	Investr	nent ł	Holdings L	.td							Status	; FINA	L
	Ś	Standar	d Penetra	ation Te	est Summary	v			Ins	tallatio	n / Inst	rument	Deta	ails	
Test Type C S S	Depth Top 1.20 2.00 3.00		Danth	N Value 7 10 13	Rep N=7 N=1	ported Result 7 (1,1/1,2,2,2) 0 (2,2/2,2,3,3) 3 (3,3/3,3,3,4)				nstr. Type SP	To (m) 1.30	Response			emarks
										Dynam					
									Depth Top 1.20	Dia. (Rec. %	,	Rem	arks
Drillin Date 10/23/2023 10/23/2023	Ig Progress Time [02:00 03:00	Borin Depth(m) 1.20 3.00	Hole Dia		d Backfill Casing Depth (m) Dia(mn	n) Depth (m) 0.00 - 0.20 0.20 - 1.00	Bentonite								
						1.00 - 1.30 1.30 - 3.00				Gei	neral F	Remark	5		
								2. 3. 4. 5.	Borehole so UXO Engin Borehole ao No groundw Borehole ba ondition.	canned with eer in atter dvanced to vater encou	h GPR, C. ndance. schedule untered.	AT & Genr ed depth.	y prior		
			Water O	oservat	tions										
Date/Time	e Depti	h Strike (m) Depth Casing	g (m) Time	Elapsed (min) Dep	pth Sealed (m)	Rose To (m)								
L				1				SAMP ES - E AZCL: U - 10 UT - 11 U38 - 3 D - Dis LB- Li C - Co TESTS S/C-SI	Environmental Samp Assumed Zone of C 00mm Diameter Undi 00mm Diameter Thi 38mm Diameter Und sturbed Sample, B-E arge Bulk Sample, E ore Sample, W-Wate	core Loss Isturbed Sample n Wall Undisturbed disturbed Sample, Bulk Sample, BLK-Block Sample r Sample, R-Root /ane, PP-Pocket F	ed Sample e Sample Penetrometer,	INSTALLATION SPIE - Standpip SPGW - Groun SPGIGW - Gas WMP - Vibrating ICM - Inclinome Hole Type IP -Inspection P CP - Cable Perc Rotary/Sonic S - Dynamic S Rotary DC - Diamond C Rotary follow or	e Piezomete water Monit / Groundwa' Wire Piezon ter it, TP-Trial P ussion, RC-I ampling, DS, oring, CP/R-	or Standpip ter Monitor S meter Pit TT - Trial ⁻ Rotary Corin /R-Dynamic	Standpipe Trench g, R/S- Sampling /

All dimensions in metres	Contractor
Scale 1:50	

A2	Site	Investigation
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3882	ron Hill :3	Start 23/10, End 23/10,		Ground Level (mOD)	Co-Ordinates (Local Gr E 531422		N 1819	40.00	Dept	WS h (m) 3.0	
ent Saffi	ron Hill	Investment	Holdir	igs Ltd	SPT Energy Ratio %	Sheet S	heet 1	of 1	Statu	FIN	AL
SA Depth (m)	MPLES & T Type	Test		Stratum D	escription		Depth (thickness)	Reduced Level	Water	egend	nstrument / Backfill
0.30 0.30	PID ES 1	VOC 0ppm	to coarse With occa (LOWER Medium of sub-round is angular glass frag (MADE G Firm dark Gravel is and carbo	of flint and type-1 materia sional voids <4mm diame GROUND FLOOR SLAB) lense dark brown clayey fi ded fine to coarse GRAVE to sub-rounded fine to co ments. Cobbles are sub-a ROUND) brown sandy gravelly CL/ angular to sub-rounded fir maceous fragments. Sanco o sub-angular of brick.	ne to coarse SAND and ar L with high cobble content. arse of flint, brick, concrete	n sand. ngular to Gravel e and ntent. concrete	0.00 (0.19) - 0.19 - (0.26) - 0.45 - - - - - - - - - - - - - - - - - - -	12.19			
1.10 1.10 1.20	PID ES 2 SPT	VOC 0ppm N=7 (1,1/1,2,2,2)	sandy silt is fine.		rey and orangish brown sl (<5mm) of soft black orgar RMATION)		(0.83) _ 	- 11.08			
2.00	SPT	N=10 (2,2/2,2,3,3)					(1.70)				
3.00	SPT	N=13 (3,3/3,3,3,4)		End of Boreh	iole at 3.00m			9.38			
Il dimensions i	n metres	Contractor	0.4- 1	vestigation	Method	- C - :		-	JAS	Appro	ved by JE

A2	2 Site I	nves	tigatio	n						Bo	oreho	ole	Log
Project Saf	fron Hil	I										Borehole W	e No S03
Job No	~~	Start	23/10/2	2023	Ground Level (n			s (Local Grid)				Depth (n	
3882	23	End	23/10/2	2023	13.5	52	E 5	31447.0) N 1819	945.0	0	1	.50
Client	Saffro	on Hill	Investr	nent ŀ	Holdings Lt	td						Status FI	NAL
	S	standar	d Penetra	ation Te	est Summary	/			nstallatio	n / Inst	rument	Detail	s
Test Type	Depth Top	Depth Ca	asing Depth Water	N Value	Rep	orted Result		Date	Instr. Type	To (m)	Response	Zone (m) Remarks
S	1.20 1.50			16 16		6 (4,4/4,4,4,4) 6 (3,3/3,4,4,5)							
									Dunom	ie Sem			
								Depth To			Rec. %		Remarks
Date 10/23/2023 10/23/2023	g Progress Time E 12:00 12:30	Borir Depth(m) 1.20 1.50	Hole Dia		d Backfill Casing Depth (m) Dia(mm		Concrete	1.20	8	(38		
									Ge	neral R	Remarks		
			Water Of	bservat	tions			2. UXO Er 3. Borehol an obstruc at WS03A 4. No grou	e scanned wit ngineer in atter e effectively re ction. Starter p n ndwater enco e backilled wit	ndance. efused at ´ it widened untered.	1.50m blgfl o d and new bo	due to en orehole a	advanced
Date/Time	e Depth	n Strike (m) Depth Casing	ı (m) Time	Elapsed (min) Dep	th Sealed (m)	Rose To (m)						
	1							AZCL: Assumed Zoi U - 100mm Diamet UT - 100mm Diamet U38 - 38mm Diame D - Disturbed Samp LB- Large Bulk Sai C - Core Sample, V TESTS S(C-SPT / CPT, V-5	er Undisturbed Sample ter Thin Wall Undisturbe ter Undisturbed Sample	ed Sample e et Sample Penetrometer,	INSTALLATION D SPIE - Standpipe SPGW - Groundw SPG(GW - Gas / WWP - Vibrating W ICM - Inclinomete Hole Type IP -Inspection Pit, CP - Cable Percus Rotary/Sonic DS - Dynamic San Rotary DC -Diamond Cor Rotary follow on	Piezometer vater Monitor S Groundwater M Vire Piezomete er TP-Trial Pit TT ssion, RC-Rota npling, DS/R-D	Monitor Standpipe er T - Trial Trench ıry Coring, R/S- Dynamic Sampling /

All dimensions in metres	Contractor
Scale 1.50	

A2 Site Investigation

Croject Saffi ob No 3882	ron Hill 23	Start 23/10 End 23/10		Ground Level (mOD)	Co-Ordinates (Local Gr E 531447		N 1819	45.00		hole No WS03 h (m) 1.50
Saffi	ron Hill	Investment	Holdir	ngs Ltd	SPT Energy Ratio %	Sheet S	Sheet 1	of 1	Statu	FINAL
SA Depth (m)	MPLES & TI Type	Test		Stratum De	escription		Depth (thickness)	Reduced Level	Water	nstrument - bueba ⁻
	No	Result	to coarse With occa (LOWER Loose da content. ((CONCRETE. 55-65% agg of flint and type-1 material isional voids <4mm diamet GROUND FLOOR SLAB) rk brown clayey gravelly fir Gravel is angular to sub-rou rete. Cobbles are angular t ROUND)	. Matrix is fine and mediur er. ie to coarse SAND with lo unded fine to coarse of flin	m sand. w cobble	0.00 (0.19) 0.19	13.33		<u> </u>
0.40 0.40	PID ES 1	VOC 1ppm					(0.84) -			
1.10 1.10 1.20	PID ES 2 SPT	VOC 0ppm N=16 (4,4/4,4,4,4)	Soft dark rounded t fine to co (MADE G		Y. Gravel is angular to sub and concrete fragments. S	9- Sand is	- 1.03 (0.47) 	12.49		
1.50	SPT	N=16 (3,3/3,4,4,5)		End of Boreh	ole at 1.50m			12.02		
All dimensions Scale 1:	in metres	Contractor	2 Site Inv	/estigation	Method Dynami	c Samp	ling		ged By JAS	Approved by

A2	2 Site I	nvesti	igatior	ı								Bo	oreh	ole	Log
Project Saf	fron Hil	I												Borehole	^{∍ No} \$03A
Job No 3882	23		23/10/2		Ground	Level (m 13.5		Co-ordinate			N 181	945.0	0	Depth (n 1	ⁿ⁾ .45
Client		End	23/10/2	2023									<u> </u>	Status	
	Saffro	on Hill I	Investr	nent H	loldin	igs Lte	d							FI	NAL
	5	Standard	l Penetra	tion Te	est Sur	nmary				Ins	stallatio	n / Inst	rument	Detail	S
Test Type	Depth Top	Depth Casi	ing Depth Water	N Value		Repo	orted Result				Instr. Type	To (m)		e Zone (m) Remarks
									23/	/10/2023	SP	1.45	1.00)-1.45	
									╵┍╴		Dynam	uic San	npling F		
										Depth Top	Dia. (Rec. %		Remarks
Drillin Date 10/23/2023 10/23/2023	Time C 01:00 01:15		g Progre Hole Dian Depth(m)		Cas	kfill sing Dia(mm)	Bac Depth (m) 0.20 - 0.20 1.00 - 1.45	Backfill Concrete Bentonite							
			Water Ob	servat	ions				2. 3. ar 4. 5.	UXO Engin Borehole en obstructio No ground	scanned wit neer in atter effectively re	h GPR, Ca ndance. efused at 1 untered.	1.45m blgfl	ny prior to I due to en	countering
Date/Time	e Deptr		Depth Casing			nin) Depti	h Sealed (m)	Rose To (m)							
									K	eys					
									SAMF ES - E AZCL U - 10 UT - 1 U38 - D - Di LB- L C - Cc TEST. S/C-S	PLES Environmental Sam Assumed Zone of 00mm Diameter U 100mm Diameter U 38mm Diameter U sturbed Sample, B .arge Bulk Sample, ore Sample, W-Wa S PT / CPT, V-Shear	idisturbed Sample hin Wall Undisturbe Indisturbed Sample	ed Sample e it Sample Penetrometer,	SPG/GW - Gas VWP - Vibrating ICM – Inclinome Hole Type IP -Inspection P CP -Cable Perc Rotary/Sonic DS -Dynamic S Rotary	be Piezometer dwater Monitor S / Groundwater M g Wire Piezomete eter Pit, TP-Trial Pit T1 sussion, RC-Rota ampling, DS/R-D Coring, CP/R-Cab	Nonitor Standpipe er r - Trial Trench ry Coring, R/S- lynamic Sampling /



Saff	ron Hil	I								B	orehole No	03A
[№] 3882	23		23/10/2 23/10/2		Ground Level (mOD)	Co-Ordinates (Local G E 531447		N 1819	945.00	D	0epth (m) 1.4	45
" Saff	ron Hil		stment H		gs Ltd	SPT Energy Ratio %	Sheet	Sheet 1	of 1	S	itatus FIN	IAL
	MPLES & Type		Test		Stratum D	escription		Depth	Reduced	Water	Legend	Instrument / Backfill
epth (m)	No		esult	Light grey	CONCRETE. 55-65% ag	gregate of angular to roun	ded fine	(thickness)	Level	5		Inst
			1	to coarse o With occas	of flint and type-1 material sional voids <4mm diamet SROUND FLOOR SLAB)	. Matrix is fine and mediu	m sand.	(0.19) -	-			
				content. G	ravel is angular to sub-rou ete. Cobbles are angular t	ne to coarse SAND with lo unded fine to coarse of flir o sub-angular of brick.	w cobble nt, brick	- 0.19 _	13.33			
								-	-			
								(0.84)				
								-	_			
								-	_			
					ne to coarse of flint, brick rse.	Y. Gravel is angular to sul and concrete fragments. S		- 1.03	12.49			
								(0.42)	_			
					End of Boreh	ole at 1.45m		-	12.07			
								-				
								-				
								-				
								_				
l dimensions	in metres 50	Contractor	A2 S	Site Inv	estigation	Method Dynami	c Samr	lina		ged By JAS		oved by

A2	Site I	nvest	tigatio	n								Bo	oreh	ole	Log
Project Saf	Project Saffron Hill											Borehole No WS04			
Job No Start 23/10/2023							es (Local Grid)					Depth (r			
3882	23	End 23/10/2023			13.69 E \$			531434.00 N 181931.00					4.00		
Client Saffron Hill Investment Holdings Ltd														Status FINAL	
Standard Penetration Test Summary									Installation / Instrument Details						
Test Type	Depth Top	Depth Ca	asing Depth Water	N Value		Reported Result							Response) Remarks
C C S S	1.20 2.00 3.00 4.00			4 7 11 8	N=4 (2,1/1,1,1,1) N=7 (1,1/2,2,2,1) N=11 (2,2/2,3,3,3) N=8 (2,2/2,2,2,2)				23/10/2023	SP	3.30	1.00)-3.30		
									Dynamic Sampling Depth Top Dia. (mm) Rec. 9						
										1.20 2.00	87	7	100	, 	
Drillin Date 10/23/2023 10/23/2023	g Progress Time D 09:00 10:15	Borin (epth(m)) 1.20 4.00	ng Progr Hole Dia Depth(m)		Casi	ng) Concrete							
10/20/2020	10.10	4.00			1.00 - 3.30) Gravel	۱ſ		Gor	oral F	Pomarke	2		
									General Remarks 1. Borehole scanned with GPR, CAT & Genny prior to dr 2. UXO Engineer in attendance. 3. Borehole drilled beyond scheduled depth to prove nat boundary. 4. No groundwater encountered. 5. Borehole backilled with arisings and reinstated as per condition.					atural	
Water Observations															
Date/Time	e Depth	Strike (m)) Depth Casing	g (m) Time	Elapsed (mi	n) Depth	n Sealed (m)	Rose To (m)							
									5 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Keys SAMPLES ES-Environmental Samp SES-Environmental Samp Common Diameter The VI-100mm Diameter The USB-38mm Diameter The USB-38mm Diameter The USB-38mm Diameter The D-Disturbe Sample, B- LB-Large Bulk Sample, B- C - Core Sample, B- SIC-SPT / CPT, V-Shear V MP-Mackintosh Probe, V	ore Loss isturbed Sample n Wall Undisturbe disturbed Sample Bulk Sample, BLK-Block Sample r Sample, R-Root /ane, PP-Pocket F	d Sample Sample Penetrometer,	VWP - Vibrating ICM – Inclinome Hole Type IP -Inspection P CP -Cable Perc Rotary/Sonic	e Piezometer Jwater Monitor S / Groundwater M Wire Piezometre eter it, TP-Trial Pit T ussion, RC-Rota ampling, DS/R-E coring, CP/R-Cat	Nonitor Standpipe er r - Trial Trench ry Coring, R/S- lynamic Sampling /

A2 Site Investigation

Saff	ron Hill								Borehole No WS04
Job No 38823		Start 23/10/ End 23/10/	2025	Ground Level (mOD)	Co-Ordinates (Local Gi E 531434		N 18193 [.]	1.00	Depth (m) 4.00
^{ent} Saff	ron Hill	Investment	Holding	js Ltd	SPT Energy Ratio %	Sheet S	Sheet 1 o	f 1	Status
	MPLES & T Type	ESTS Test		Stratum De	escription			educed	Vater nstrument
0.40 0.40	PID ES 1	VOC 0ppm	to coarse of With occasi (BASEMEN Loose to me coarse SAN sub-angular	CONCRETE. 55-65% agg flint and type-1 material onal voids <4mm diamet T SLAB) edium dense gravelly dai ID with medium cobble c fine to coarse of flint, br us fragments. Cobbles a ick.	gregate of angular to roun . Matrix is fine and mediur	m sand. e to lar to	0.00 (0.19) -	13.50	
1.20 1.40 1.40	SPT PID ES 2	N=4 (2,1/1,1,1,1) VOC 0ppm					(2.26) -		
2.00	SPT	N=7 (1,1/2,2,2,1)							
2.50 2.50	PID ES 3	VOC 0ppm	Soft brown to sub-roun and mediun (MADE GR	ded fine to coarse of flint n.	andy silty CLAY. Gravel is and brick fragments. San	angular d is fine		11.24	
3.00	SPT	N=11 (2,2/2,3,3,3)	orange fine	sand.	with occasional partings	of	(0.85) _ _ _ _ _ _ _ _ _	10.39	
4.00	SPT	N=8 (2 2/2 2 2 2)	(WEATHER	ED LONDON CLAY FO			(0.70)	9.69	
4.00	571	N=8 (2,2/2,2,2,2) Contractor		End of Boreh	ole at 4.00m Method			Logged	By Approved by

