

Bimal Barchha,
Viva Property Group Ltd
19 York Road
Northampton
NN1 5QG

5th January 2024**Our Ref:** 5551 24 01 05 Ltr Rpt 07 Rev A TI BM

Dear Bimal,

SITE: 81/81a Whinbush Road, Hitchin, SG5 1PZ
SERVICE: Supplementary Geo-Environmental Site Investigation

Introduction

The work covered in this Supplementary Geo-Environmental Site Investigation Letter Report was commissioned by Viva Property Group Ltd for the site known as 81/81a Whinbush Road, Hitchin (see Appendix A Figure 1 – Site Location Plan).

At the time of this Supplementary Geo-Environmental Site Investigation the site comprised an unoccupied plot with a residential house in the northwestern corner of the site and the remainder of the site area related to a disused former vehicle repair garage which included a single-story building office and reception building along the northern site boundary, a forecourt in the centre of the site laid to asphalt hardstanding and vehicle repair garages along the southern site boundary. A stockpile of Made Ground was also noted on site. (See Appendix A Figure 2 – Existing Site Layout Plan).

This Supplementary Geo-Environmental Site Investigation Report has been prepared in relation to planning permission Ref: 22/02953/FP further to previous reports which include;

- Geo-Environmental Desk Study Report (ref 4996 22 10 10 Rpt 01 Rev 01 AK DA) dated October 2022;
- Preliminary Geo-Environmental Site Investigation Report (ref; 5445 23 08 04 Rpt 01 Rev A BD BB) dated August 2023 to help satisfy planning conditions (namely condition 11) associated with the proposed development;
- Ground Gas and Groundwater Addendum Letter Report (ref 5445 24 01 26 Ltr Rpt 01 Rev A TI BB) dated January 2024 ; and
- WM3 Waste Classification Assessment (ref: 5457 24 01 18 Ltr Rpt 01 Rev A TI WS) dated January 2024

The proposed development involves the demolition of the existing garage buildings to make way for the construction of a three-storey block of flats containing 1no. two-bedroom flat and 7no. one-bedroom flats with associated parking and areas of soft landscaping / gardens and an extension to the existing residential property is also proposed (see Appendix A Figure 3 – Proposed Site Layout Plan).

This further assessment also aims to address comments by the Environmental Protection Officer following their review of the previous Preliminary Geo-Environmental Site Investigation Report. In summary the Environmental Protection Officer requested further investigation of areas of the site within the footprint of proposed gardens, additional testing of the ground in areas of former above ground fuel storage for VOCs and hydrocarbons (eg southeast corner of the site where oil drums had been kept) and beneath existing building footprints. The scope of Supplementary Site Investigation was specified within a Proposed Geo-Environmental Site Investigation Scheme (ref: 5551 23 10 18 Ltr 01 Rev A TI BB) dated November 2023 which was approved by the LPA (see Appendix B for Correspondence).

This report should be read in conjunction with the previous reports referenced above.

Previous Preliminary Geo-Environmental Site Investigation Report

The following provides a brief summary of the Geo-Environmental conditions at the site based on the findings of the previous Preliminary Geo-Environmental Site Investigation Report (Ref: 5445 23 08 04 Rpt 01 Rev A RC BB) by SEC Ltd dated August 2023. Reference should be made to the aforementioned document for a more comprehensive view of the results and their implications.

The previous Geo-Environmental Site Investigation Report identified potential on site sources of contamination including:

- Made Ground across the site associated with previous phases of development since 1898, identified up to between 0.20m bgl (WS03) and 1.20m bgl (HP01) and typically comprising gravelly Clay, sandy Gravel and gravelly Sand with very slightly elevated concentrations of VOCs up to 3.4ppm (WS05 at 0.05m bgl) and containing fragments of tarmacadam (WS03 between 0.05 and 0.20m bgl) and clinker (within HP01 between 0.10 – 1.20m bgl) and concentrations of zinc up to 1,200mg/kg (WS01 at 0.2m bgl);
- Former site uses including historical use as a builder's yard, lock up garages in the 1980s / early 1990s and the more recent use until early 2023 as a car servicing / repairs garage with potential contaminative features including vehicle repair bays, storage of engine parts, storage of oil and fuel drums in the south west corner of the site with evidence of leaked / spilt hydrocarbons given oil staining to the hardstanding in this area of the site;
- A below ground fuel storage tank located towards the western corner of the site;
- Potentially elevated concentrations of ground gases; and
- Potential for groundwater contamination beneath the site associated with contaminants of concern relating to the previous site uses including hydrocarbons, BTEX and VOCs.

Potential off-site sources of contamination:

- Numerous Garages the closest of which is ~7m south of the site;
- 1 No. Nursery ~20m north/north-west of the site since 1881;
- 1 No. Gas Works ~80m north-west of the site since 1881;
- 1 No. Smithy ~70m north of the site since 1898;
- 1 No. Electrical Power Station ~220m south-west of the site since 1923;
- 2 No. Depots ~140m and ~160m north of the site since 1964;
- 1 No. Electrical Substation ~30m north of the site since 1976;
- 1 No. Works ~30m west of the site since 1992; and
- Discharge Consent ~145m southwest relating to Sewage overflow into the River Hiz.

Based upon the findings of the previous phase of site investigation the following recommendations were made in order to help mitigate potential risks to receptors associated with the sources that had been identified;

- That the ongoing groundwater and ground gas monitoring be completed, and the findings be presented in an Addendum Report to supplement the findings of the site investigation. Analysis of any groundwater encountered should include contaminants of concern including hydrocarbons, VOCs and BTEX. It was also therefore recommended that the existing monitoring boreholes be retained and afforded protection until the LPA have approved the contaminated land assessment for the site;
- That further investigation be conducted in the front garden of the existing residential property in the northwestern corner of the site which could either be completed during the period of remaining environmental monitoring and reported within the Addendum Report or be conducted later as a separate phase of investigation. Additionally further validity investigation and analysis was also recommended beneath the below ground fuel tank following its decommissioning and removal from site;
- That Petroleum Officer's Records be obtained to establish any further information that may be available for the below ground fuel storage tank that has been identified on site;
- That a Watching Brief be maintained by an Environmental Consultant during the removal of the existing hardstanding covering the site following demolition of the existing buildings to be removed and during the preparatory redevelopment groundwork. Confirmatory chemical laboratory analysis of representative samples should be undertaken for any suspect material identified for the contaminants of concern to help confirm an absence of potentially unidentified contamination;
- That the below ground fuel storage tank be appropriately decommissioned, a degassing certificate be obtained and the tank be removed from site by a tank decommissioning specialist under the supervision of an Environmental Consultant, in accordance with an LPA approved Remedial Method Statement. The tank and any contents e.g fuel, tank bottoms or foam should be appropriately disposed of to a suitably licensed waste management facility in accordance with current Environment Agency WM3 Guidance before the tank is removed / disturbed to help prevent unauthorised releases during removal / decommissioning;
- That areas of proposed soft landscaping / gardens be provided with a certified "clean" cover system, comprising a minimum thickness of 300mm imported topsoil laid over a hi-visibility marker layer (permeable geotextile or similar). The recommended cover system thickness should be re-evaluated in light of any further ground investigation data that becomes available. Subject to existing and proposed site levels existing Made Ground may require excavation and appropriate disposal from site to afford room for the provision of a cover system in garden / landscaped areas. Prior to the importation of topsoil, the supplier's chemical batch data should be provided to an Environmental Consultant for approval in relation to human health and following provision of imported topsoil on site the cover system should be certified including representative chemical analysis to corroborate the initial supplier batch data and that the minimum thickness has been provided over the a hi-visibility marker layer. The "clean" cover system should provide in accordance with an LPA

approved Remedial Method Statement and documented within a Verification Report for Regulatory approval;

- That a Discovery Strategy should be implemented on site during the redevelopment works which should include for the immediate reporting of any potential indicators of ground or water contamination (e.g. cement bonded asbestos sheeting fragments, ash/clinker or hydrocarbon odours) for additional separate assessment by an Environmental Consultant;
- That groundworkers should wear appropriate PPE and employing high standard of personal hygiene (i.e. washing hands, working in well-ventilated areas, avoid confined spaces, avoiding contact with the soil and not smoking) during all excavation work;
- That all waste material generated during the site's redevelopment should be disposed of from site to suitably licenced waste management facilities in accordance with current Environment Agency WM3 Guidance. Any waste arisings to be disposed of to landfill will also require chemical WAC testing to inform the correct classification for any receiving facility. The recommended Watching Brief by an Environmental Consultant during preparatory groundwork should help to ensure waste arisings are correctly segregated according to waste streams and waste disposal classification. All waste disposal tickets should be retained for duty of care auditing purposes. If waste arisings are to be considered for re-use on site then it should be noted that this would require implementation of the CL:AIRE CoP or an approved EA waste exemption permit;
- That the water supplier be contacted to determine their requirements with respect to the type of water supply pipe included within the design of the new properties. Subject to their requirements it may be necessary to install chemically resistant barrier water supply pipe. It is recommended therefore that correspondence be obtained from the water supplier which confirms standard water supply pipe is suitable or alternatively chemically resistant water supply pipe should be afforded to the new properties; and
- That prior to the commencement of any remedial work a Remedial Method Statement should be approved by the Local Planning Authority. In addition any remedial work undertaken should be documented within a Validation Report

To help address LPA requirements further to the findings of the initial phase of site investigation SEC produced a Proposed Geo-Environmental Site Investigation Scheme as referenced above, which prescribed the scope of Supplementary proposed to be undertaken by this second phase of site investigation. The scope of proposed investigation was approved by the Environmental Protection Officer at the LPA and generally included the following;

The conduct of 5No. hand dug trial pits / hand augers across the site to target the front garden of the existing house (81a – north western corner of the site), beneath the footprint of the former garage office / reception building situated along the northern boundary of the site, within the proposed gardens / landscaping to the south western corner of the site in the vicinity of previous above ground fuel storage drums that had been located here and in the south east corner of the site where VOCs had previously been identified in the shallow Made Ground.

Description of Work

SEC attended the site to conduct the site investigation fieldwork on the 16th and 22nd of November 2023 (See Appendix C for Site Photos).

The site investigation comprised 5 no. hand dug trial pits (HP101 to HP105) up to 1.2m bgl (see Appendix A Figure 4 for Exploratory Hole Location Plan) based upon the following scope of work;

- Purchase of Petroleum Officer Records;
- Full time site supervision by an SEC Engineer to record ground conditions to BS 5930 / Eurocode 7 and CIRIA 574, collect samples and document the investigation;
- Excavation of 5 No. hand dug trial pits and recovery of soil samples;
- Chemical laboratory analysis of soil samples for a potential contaminants of concern including asbestos, Metals, speciated PAHs, Phenols, TPH, speciated TPH, and VOCs; and
- Production of a Supplementary Geo-Environmental Site Investigation Report;

Petroleum Officer's Records

Further to the identification of a below ground fuel storage tank during the previous site investigation, the Petroleum Officer's Records have been obtained for the site to help inform details of the below ground tank further. The available records are provided in Appendix D

The records confirm that the tank identified adjacent to the site entrance on the western side of the site was the only known below ground tank recorded on site. Records indicate that it was a 500 gallon petrol tank with a fuel pump immediately adjacent to the southern side of the tank's position (the fuel pump has since been removed and is no longer present on site).

Chemical Laboratory Analysis

Soil samples were collected from the exploratory holes and were sent for analysis at an independent UKAS and MCERTS accredited laboratory.

Soil samples recovered from the Made Ground and underlying natural material were analysed for a range of determinands including Contaminants of concern: Asbestos, metals, speciated hydrocarbons, speciated PAHs, VOCs, phenols and PH.

Lithology

Detailed information relating to the strata encountered was recorded on Exploratory Hole Records, which are presented in Appendix E. A summary of the ground conditions observed however is presented below.

Made Ground was encountered in all exploratory holes, except for HP102 (located midway across the southern end of the site) where it appeared to be absent beneath the existing hardstanding. The Made Ground observed ranged in depth between 0.15m bgl (HP101) and 0.9m bgl (HP103). Typically the Made Ground appeared to comprise sandy Gravel / gravelly Sand or gravelly Clay with varying frequencies of fragments including flint, brick, concrete, chalk, charcoal, clinker and slate. It is noted that these findings are generally consistent with the Made Ground identified by the previous phase of investigation.

Underlying the Made Ground natural deposits were consistent in the hand pits and generally comprised gravelly Clay.

Visual and olfactory observations indicative of potential contamination noted within the hand pits included fragments of clinker (HP101) and black staining and a slight hydrocarbon odour (HP103). VOC headspace tests on the samples recovered from the exploratory holes were conducted using a PID and recorded concentrations of VOCs up to 1.3ppm (HP102 at 0.05m bgl which is noted to relate to concrete hardstanding within the former garage workshop at the southern end of the site and which is indicative of oil staining to the slab).

Groundwater

Groundwater was not encountered within the hand pits however it is noted that groundwater levels were previously recorded within the earlier boreholes between 1.23m bgl (WS05) and 3.85m bgl (WS02).

Chemical Analysis

The results of the soil analyses have been compared against the available published guidance for 'residential with home-grown produce' land use given the proposed end use of the property is residential with private gardens. These guidance values have been adopted from the LQM/CIEH (Land Quality Management / Chartered Institution of Environmental Health) Suitable Use Levels (S4ULs) for Human Health Risk Assessment 2015. Where concentrations for contaminants are not provided within the LQM/CIEH S4ULs the Category 4 Screening levels (CL:AIRE). Results for the soil analysis detailed below are presented in Appendix F of this report.

It should be noted that the various available S4UL values that have been used in the current absence of any recognized SGV's must be used with some caution, as they have not been formally reviewed or endorsed by Government or the Environment or Health Protection Agencies.

Made Ground samples were scheduled for laboratory analysis for the contaminants of concern including metals, asbestos, hydrocarbons (including total and aliphatic and aromatic speciation), speciated PAHs, BTEX and VOCs. The findings of the chemical analysis are summarised below:

Metals

The previous phase of investigation identified elevated concentrations of Zinc within WS01 to the south western corner of the site where zinc within the shallow Made Ground up to 0.3m bgl was up to 1200mg/kg and in the underlying natural material was recorded to be 3740mg/kg at 0.7m bgl. HP103 was located in the south western corner of the site nearby to WS01 to help better clarify hydrocarbon and VOC impacts associated with the storage of fuel drums in the area of the site previously, however analysis of the Made Ground and natural material within HP103 has recorded further incidence of elevated metal concentrations. At 0.15m bgl lead was recorded up to 389mg/kg, mercury was up to 26.9mg/kg and zinc was up to 667mg/kg. Whilst analysis during this phase of investigation did not include analysis of natural material beneath the Made Ground for metals it is noted that lead and mercury were not previously recorded to be elevated within the natural material tested within WS01 at 0.7m bgl.

The adopted guidance values for lead and mercury in relation to human health for the proposed end use are 190mg/kg and 1.2mg/kg respectively. The human health guidance value for zinc (3,700mg/kg) has not been exceeded within the shallow Made Ground although the deeper natural material did marginally exceed the guidance value however, it is noted that the zinc recorded is considered elevated with respect to plants.

Poly Aromatic Hydrocarbons (PAHs)

PAHs were not previously recorded to be elevated by the previous site investigation however the Made Ground within HP103 during this supplementary phase of investigation was identified to exhibit elevated concentrations of PAHs. Total PAH was recorded up to 71.3mg/kg at 0.15m bgl which included elevated PAH constituents including benzo(a)pyrene (8.80mg/kg) and dibenz(a,h)anthracene (0.85mg/kg). Based upon an organic matter content of 2.5% (which is the average for the gravelly Clay Made Ground horizon containing the PAHs), guidance thresholds for benzo(a)pyrene and dibenz(a,h)anthracene are 2.7mg/kg and 0.28mg/kg respectively and are exceeded by the concentrations recorded within HP103. No other elevated concentrations of PAHs were identified in the other exploratory holes.

Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX)

Concentrations of TPH were not previously recorded to be elevated by the previous phase of investigation, however analysis of concrete hardstanding, Made Ground and underlying natural material encountered during this current phase of work has identified elevated concentrations of TPH. Concrete hardstanding was identified to contain hydrocarbons and recorded concentrations up to 4,712mg/kg. Speciated TPH analysis indicated that the majority of the hydrocarbons were aliphatic associated with carbon fraction C21-C34 (2,987mg/kg) which does not exceed the adopted guidance threshold of 65,000mg/kg however an aromatic carbon fraction C21-C35 was identified up to 1292mg/kg which exceeds the guidance value of 1110mg/kg (based upon 1% organic matter). Concrete at other locations including HP102 and HP103 were also identified to contain concentration of hydrocarbons.

Made Ground was identified to exhibit hydrocarbons up to 6,942mg/kg (HP103 at 0.25m bgl). Speciation of these hydrocarbons indicated that the majority of the hydrocarbons were aliphatic and despite being more highly elevated than the hydrocarbons in the concrete hardstanding, the Made Ground

concentrations of individual aliphatic and aromatic fractions were not in exceedance of guidance values (although soils did exhibit a hydrocarbon odour). It is also noted that the impacted natural material recorded at 0.75m bgl in HP103 exceeded hydrocarbon guidance values. Basic speciation of the 3,021mg/kg TPH at 0.75m bgl indicated that carbon fraction C21-C40 was 2,819mg/kg which would exceed aromatic fraction guidance values and given the signature of the speciated TPH results in HP103 at 0.15m bgl and 0.25m bgl it is likely that these hydrocarbons would include an unacceptably elevated aromatic fraction. By 1.20m bgl within HP103 TPH had reduced down to 549mg/kg.

Analysis of samples for BTEX (which included some of those samples containing elevated TPH) did not identify unacceptably elevated concentrations of BTEX.

Volatile Organic Compounds (VOCs)

Analysis of samples recovered from the exploratory holes included analysis for VOCs. VOC analysis identified some low concentrations of BTEX derivatives were identified within HP103 including ethyl benzene (6ug/kg at 0.25m bgl), m,p-xylene (22ug/kg at 0.25m bgl) and 1,2,4-trimethylbenzene (57ug/kg at 0.25m bgl) but they were not considered unacceptably elevated and were consistent with the elevated TPH discussed above. They were also absent by 0.75m bgl. No elevated concentrations of chlorinated solvents were identified in any of the samples analysed for VOCs.

Asbestos

None of the samples analysed were identified to contain asbestos.

Stockpile

The stockpile of Made Ground material identified to the north eastern corner of the site was analysed and this material did not exhibit any elevated concentrations of metals, TPH, speciated PAHs or asbestos.

Discussion & Recommendations

The previous phase of investigation identified relatively shallow Made Ground across the site limited to within 1m bgl except for HP01 in the south eastern corner of the site where the depth to the base of the Made Ground remained unproven at 1.20m bgl. Observations of the ground conditions during this Supplementary Geo-Environmental Site Investigation were generally consistent with the previous findings and accordingly the Made Ground was identified between 0.15m bgl (HP101) and 0.9m bgl (HP103) and consisted of sandy Gravel / gravelly Sand or gravelly Clay with varying frequencies of fragments including flint, brick, concrete, chalk, charcoal, clinker and slate. Underlying natural deposits generally comprised a gravelly Clay which is also consistent with the previous findings.

Chemical laboratory analysis of the Made Ground and natural soils previously identified elevated concentrations of zinc within WS01 in both the Made Ground (1,200mg/kg at 0.2m bgl) and within the underlying natural material (3,740mg/kg at 0.75m bgl). Other potential contaminants of concern including TPH, PAHs, asbestos, BTEX and VOCs were not previously identified to be unacceptably elevated. Laboratory analysis during this supplementary phase of investigation have identified further

elevated concentrations of metals within HP103 which was located in the south western corner of the site close by to the previous WS01 position. Elevated metals within the Made Ground at HP103 included lead, mercury and zinc as well as elevated PAHs which exceeded generic human health guideline values (except zinc which was elevated with respect to plants rather than human health) based upon guidance values for the proposed residential end use with home grown produce.

Arguably the primary contaminant of concern relates to hydrocarbons (TPH) given the previous site use as a vehicle repair garage with an underground fuel storage tank and with previous oil drums that were kept in the south western corner. During the previous phase of investigation concentrations of hydrocarbons were not identified to be particularly elevated although analysis during this second phase of work has identified higher concentrations of TPH than previously identified. The concrete ground slab across the footprint of the garage building located to the southern end of the site was identified to be impacted with elevated concentrations of hydrocarbons. Similarly the Made Ground beneath the hardstanding within HP101, HP102 and HP103 exhibited elevated concentrations of hydrocarbons which are considered to suggest that leaked / spilt fuels and oils used and stored in the southern area of the site had penetrated beneath the existing ground slab. However, analysis of the natural soils beneath the Made Ground did not identify elevated hydrocarbon concentrations and as such the impact does not appear to have migrated deeper than the near surface soils up to ~1.0m bgl.

Near surface Made Ground was also identified to contain low concentrations of VOCs (BTEX constituents) in the south eastern (HP01) and south western (HP103) corners of the site but they were absent within HP101 and HP103. The low level VOC (BTEX derivatives) impact is considered likely to relate to hydrocarbon impact identified.

Groundwater analysis and ground gas risks were discussed in the Groundwater and Ground Gas Addendum and in summary some TPH impact was recorded within the groundwater beneath the site during the earlier assessment however concentrations were not indicative of severe hydrocarbon contamination. Concentrations were recorded up to between 14ug/l (WS05) and 36ug/l(WS02) and were not considered to pose unacceptable risks requiring remediation. As such no further groundwater analysis was conducted during this second phase of investigation. Ground gas concentrations were typically low however some elevated VOC concentrations were recorded. Whilst protective measures in accordance with Characteristic Situation 2 of current CIRIA C665 guidance were not recommended, a passive sub-floor void was recommended beneath a suspended floor slab to mitigate potential vapour ingress.

Potential risks associated with the soil contamination identified primarily appear to relate to groundworkers involved in the preparatory groundwork required to build the proposed development and in relation to proposed garden / landscaped areas. Potential risks to site neighbours and controlled waters are considered to be low given that the impact identified is limited to near surface soils, groundwater impact is only marginal and will be likely to naturally attenuate given that the ongoing source of hydrocarbons will be removed by the redevelopment of the site.

Previous recommendations made within the earlier site investigation report would therefore appear to be remain generally applicable in order to mitigate potential risks to the receptors associated with the proposed development and as such the recommendations provided in the initial phase of site investigation have been provided below and have been updated where necessary to mitigate risks with the additional ground contamination identified by this second phase of assessment;

- That the existing monitoring boreholes be retained and afforded protection until the LPA have approved the contaminated land assessment and Remedial Strategy for the site;
- That the below ground fuel storage tank be appropriately decommissioned, a degassing certificate be obtained and the tank be removed from site by a tank decommissioning specialist under the supervision of an Environmental Consultant, in accordance with an LPA approved Remedial Method Statement. The tank and any contents e.g fuel, tank bottoms or foam should be appropriately disposed of to a suitably licensed waste management facility in accordance with current Environment Agency WM3 Guidance before the tank is removed / disturbed to help prevent unauthorised releases during removal / decommissioning. Additionally validation samples should be recovered from beneath the tank:
- That a Watching Brief be maintained by an Environmental Consultant during the removal of the existing hardstanding covering the site following demolition of the existing buildings and during the preparatory redevelopment groundwork, to facilitate segregation of hydrocarbon contaminated concrete, tarmac and unimpacted concrete for appropriate off site disposal to a suitably licensed waste management facility. In addition near surface remedial excavation is required to remove Made Ground that is impacted with elevated concentrations of hydrocarbons, meals and PAHs from the southern end of the site in the vicinity of HP101, HP103 and WS01 up to 1.0m bgl (or natural material whichever is shallowest). Remedial excavations should be certified by basal soil validation sample analysis for the contaminants of concern and confirmatory chemical laboratory analysis of representative samples should be undertaken for any suspect material identified elsewhere across the site during the removal of hardstanding and preparatory groundwork, to help confirm an absence of impact;
- That areas of proposed soft landscaping / gardens be provided with a certified “clean” cover system, comprising a minimum thickness of 300mm imported topsoil laid over a hi-visibility marker layer (permeable geotextile or similar) although a thicker cover system should be provided to 600mm thickness in the gardens proposed within the south western corner of the site where deeper impacted soils were identified. Subject to existing and proposed site levels existing Made Ground may require excavation and appropriate disposal from site to afford room for the provision of a cover system in garden / landscaped areas. Prior to the importation of topsoil, the supplier’s chemical batch data should be provided to an Environmental Consultant for approval in relation to human health and following provision of imported topsoil on site the cover system should be certified including representative chemical analysis to corroborate the initial supplier batch data and that the minimum thickness has been provided over the a hi-visibility marker layer. The “clean” cover system should provide in accordance with an LPA approved Remedial Method Statement and documented within a Verification Report for Regulatory approval;
- That a Discovery Strategy should be incorporated into the site induction for all operatives during the redevelopment works and should include for the immediate reporting of any potential indicators of ground or water contamination (e.g. cement bonded asbestos sheeting fragments, ash/clinker or hydrocarbon odours) for additional separate assessment by an Environmental Consultant;

- That groundworkers should wear appropriate PPE and employing high standard of personal hygiene (i.e. washing hands, working in well-ventilated areas, avoid confined spaces, avoiding contact with the soil and not smoking) during all excavation work;
- That all waste material generated during the site's redevelopment should be disposed of from site to suitably licenced waste management facilities in accordance with current Environment Agency WM3 Guidance. Any waste arisings to be disposed of to landfill will also require chemical WAC testing to inform the correct classification for any receiving facility. The recommended Watching Brief by an Environmental Consultant during preparatory groundwork should help to ensure waste arisings are correctly segregated according to waste streams and waste disposal classification. All waste disposal tickets should be retained for duty of care auditing purposes. If waste arisings are to be considered for re-use on site then it should be noted that this would require implementation of the CL:AIRE CoP or an approved EA waste exemption permit;
- That chemically resistant water supply pipe (also known as barrier pipe) included within the design of the new properties to help mitigate potential residual risks associated with ground contamination impacted the new water supply pipework to be provided on site; and
- That a Remedial Method Statement be submitted for approval by the Local Planning Authority prior to for the conduct of the recommended remedial work. In addition any remedial work undertaken should be documented within a Validation Report.

See Appendix G for General Limitation and Exceptions.

Kind Regards

Damian Jones

Managing Director

d.jones@sevenoaksenvironmental.co.uk

enc.

Appendix A – Figures

Figure 1 – Site Location Plan

Figure 2 – Existing Site Layout Plan

Figure 3 – Proposed Site Layout Plan

Figure 4 – Exploratory Hole Location Plan

Appendix B – Correspondence with Regulators

Appendix C – Site Photos

Appendix D – Petroleum Officer Records

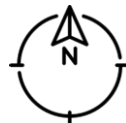
Appendix E – Exploratory Hole Records

Appendix F – Chemical Laboratory Results

Appendix G – General Limitations and Exceptions

Appendix A

Site Location Plan



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This map is not to be relied upon for accuracy and is for identification purposes only

SITE: 81/81A Whinbush Road, Hitchin, SG5 1PZ

SCALE: NTS

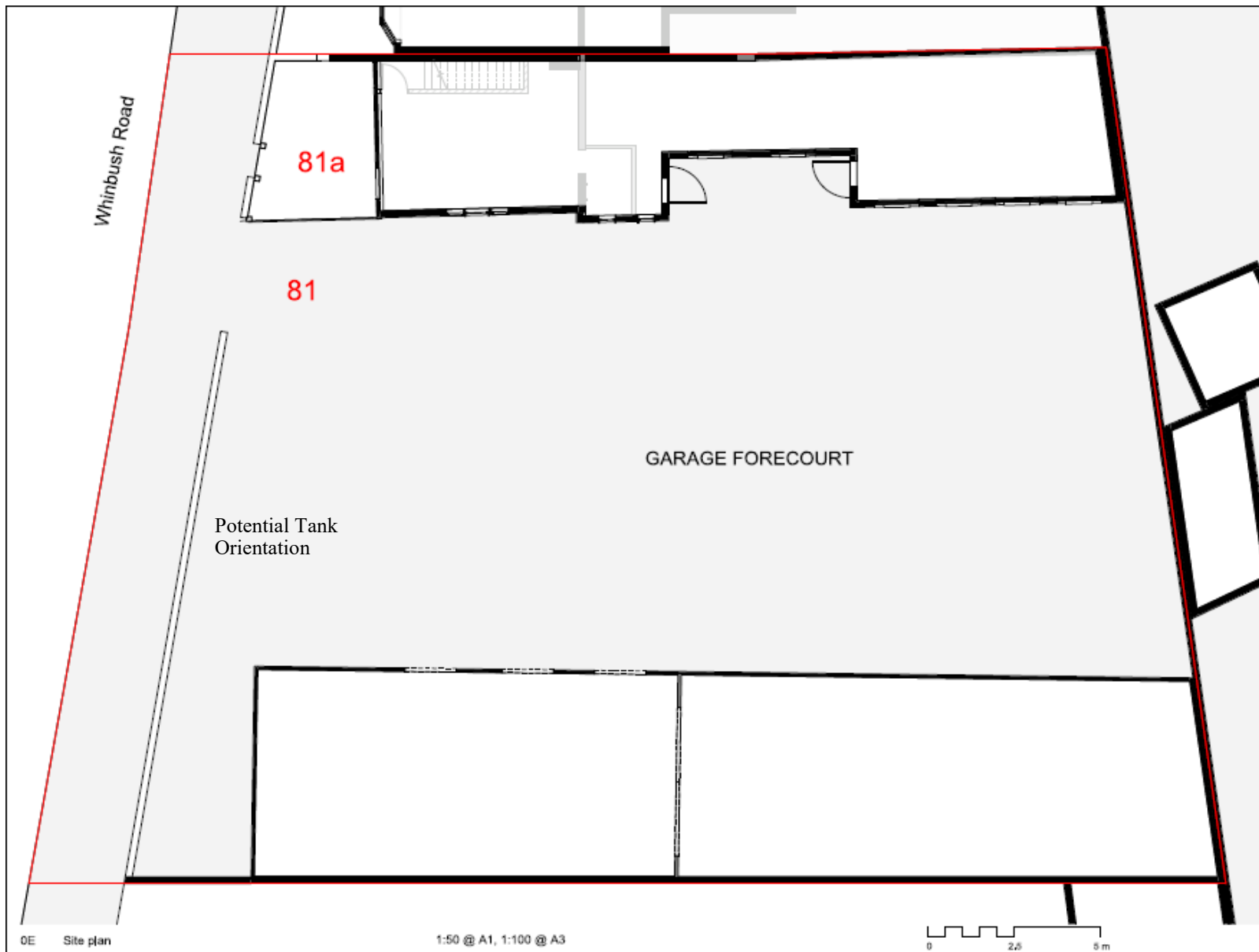
JOB NO: 5551

FIGURE TITLE: Site Location Plan

REV: 01

FIGURE NO: 1





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SITE: 81/81A Whinbush Road, Hitchin, SG5 1PZ

SCALE: NTS

JOB NO: 5551

FIGURE TITLE: Site Layout Plan

REV: 01

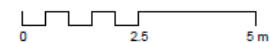
FIGURE NO: 3

 **SEVENOAKS
ENVIRONMENTAL
CONSULTANCY**



P05 Proposed Site Plan

1:50 @ A1, 1:100 @ A3



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SITE: 81/81A Whinbush Road, Hitchin, SG5 1PZ

SCALE: NTS

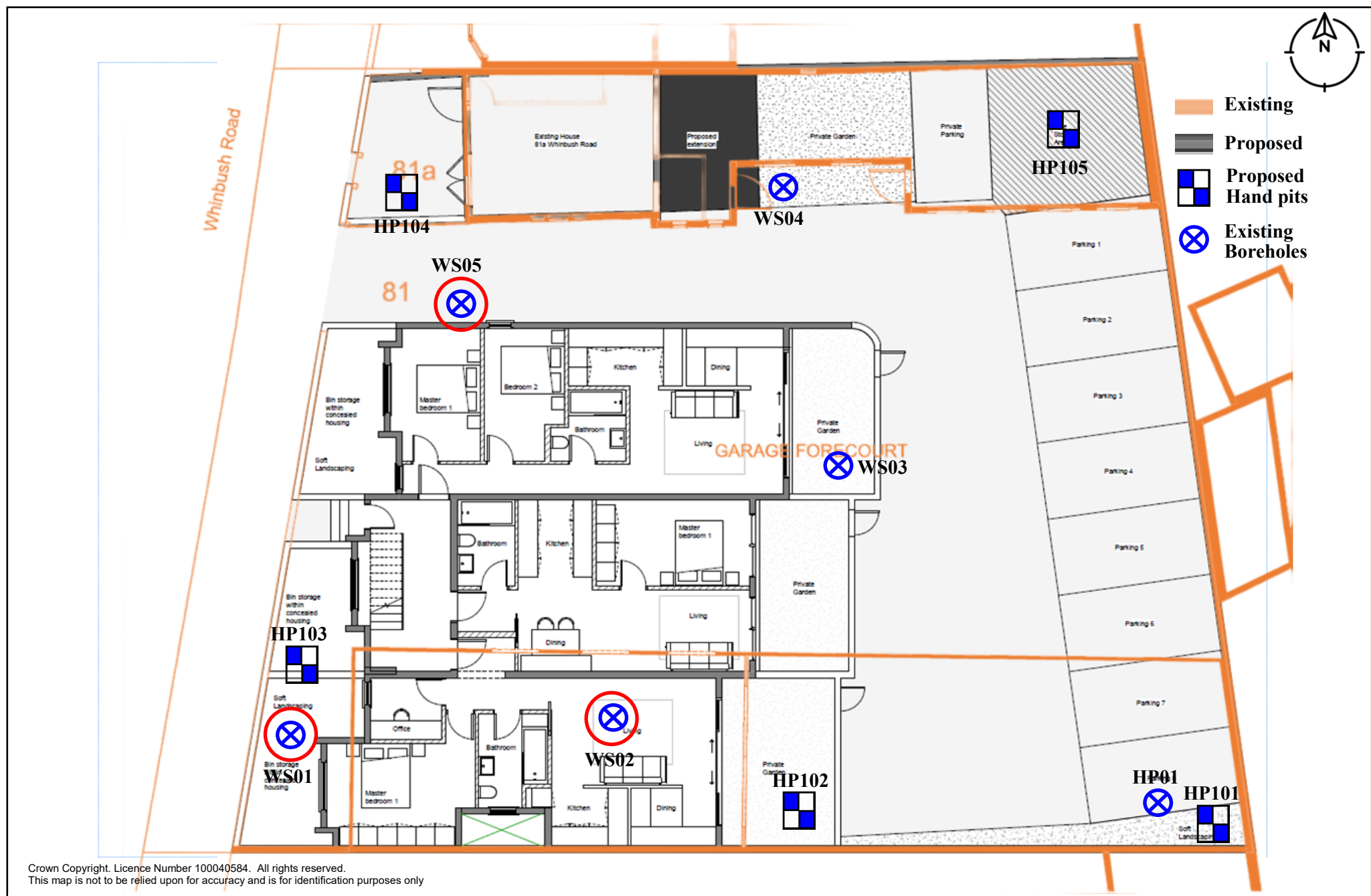
JOB NO: 5551

FIGURE TITLE: Proposed Site Layout Plan

REV: 01

FIGURE NO: 3





SITE: 81/81A Whinbush Road, Hitchin, SG5 1PZ	SCALE: NTS	JOB NO: 5445	
FIGURE TITLE: Proposed Exploratory Hole Layout Plan	REV: 01	FIGURE NO: 1	

Appendix B

Correspondence
with Regulators

Brendan Davis

From: Laura Blazquez [REDACTED]
Sent: 09 November 2023 13:16
To: Tobias Ing
Cc: Brendan Davis; Damian Jones; Peter Bull
Subject: RE: 5551 - 23/02011/DOC. 81 Whinbush Road, Hitchin - Further Site Investigation Scope

Dear Tobias,

Thank you for forwarding the proposed scope for further investigation at the above-mentioned site.

I am in agreement with the proposed scope and look forward to receiving the report of the investigation. I also look forward to receiving the reports for the groundwater and ground gas monitoring, analysis and assessment, as previously discussed. As always, all reports to be included in the application for discharge should be formally submitted to the Planning department for registration.

Kind regards,



Laura Blazquez

Environmental Protection Officer

[REDACTED]

Working hours 10am to 2pm, Monday to Thursday.

www.north-herts.gov.uk

From: Tobias Ing <[REDACTED]>
Sent: 08 November 2023 16:13
To: Laura Blazquez [REDACTED]
Cc: Brendan Davis [REDACTED] Damian Jones
[REDACTED]

Subject: 5551 - 23/02011/DOC. 81 Whinbush Road, Hitchin - Further Site Investigation Scope
Importance: High

Dear Laura,

Further to your meeting with Damian, please find attached the proposed scope for the Further Site Investigation, as discussed with Damian for your consideration.

Should you have any queries please do not hesitate to contact us.

Kind regards,

Tobias

Tobias Ing

Graduate Geo-Environmental Consultant



Sevenoaks Environmental Consultancy Ltd

145a Hastings Road, Pembury, Tunbridge Wells, Kent, TN2 4JU

Company No: 5330038

VAT No: 851 0723 49

Tel: 01892 822 999



www.sevenoaksenvironmental.co.uk

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The Customer Service Centre at the Council Offices is now open on Mondays 9-5 and Wednesdays 9-12. All other days and times are by [appointment only](#). If you need to speak to us, please [contact us](#) to discuss how we can help.

Received your annual Council Tax bill? It's quick and easy to [manage your account online with MyAccount](#).



Appendix C

Site Photos



Photo 1— View of HP03 in the south western corner of the site



Photo 2— View of the soil profile exposed on HP03



Photo 3—HP102 conducted within the existing garage building to the southern end of the site which is proposed to become part of the proposed residential gardens



Photo 4—Arisings from HP101 in the south eastern corner of the site



Photo 5—View of the site towards the east at the time of the Supplementary Site Investigation



Photo 6—View of the site towards the south western corner at the time of the Supplementary Site Investigation



Photo 7—View of the northern end of the site during the Supplementary Site Investigation

Appendix D

Petroleum Officer
Records



Community Protection Directorate

Tobias Ing
Sevenoaks Environmental Consultancy Ltd
145a Hastings Road
Pembury
Tunbridge Wells
Kent
TN2 4JU

**Fire Protection
Regulatory Services**
Hertfordshire County Council
Room 346, Old Block, Postal Point CH0331
County Hall
Pegs Lane
Hertford, Herts SG13 8DQ

Telephone : 01707 292668
Email : [REDACTED]
Your ref : [REDACTED]
My ref : SR 24068
Date : 19th October 2023

Dear Tobias,

REF: 81/81A Whinbush Road, Hitchin, SG5 1PZ

As requested, we have examined our files and are pleased to provide the following information.

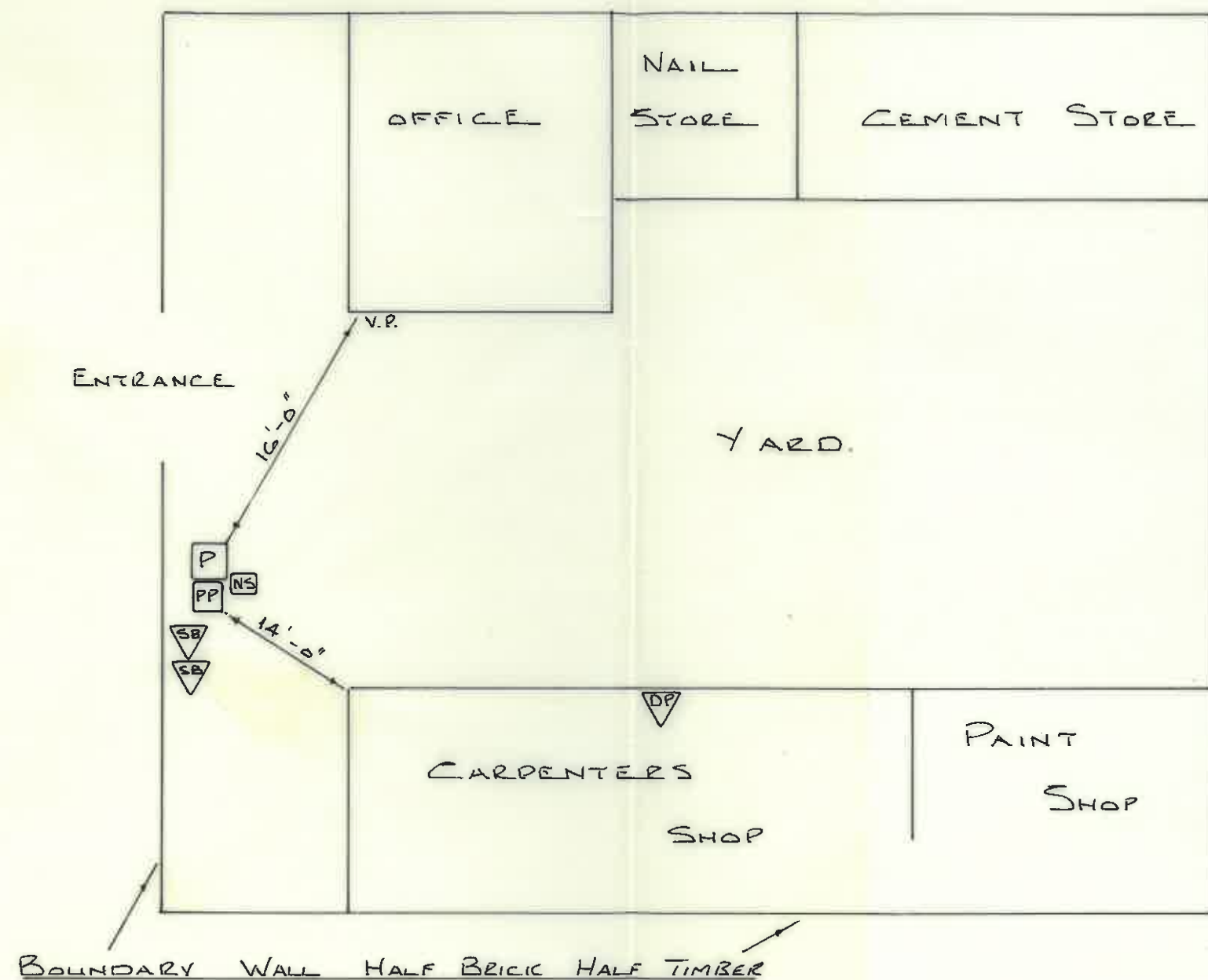
Our records show that:

- 1) A Masters & Sons occupying site
- 2) 500 gallon tank
- 3) Jones & Swindon occupied the site and a site plan is attached

Please note that the details are correct according to our records. However, we cannot guarantee the accuracy of this information.

Yours sincerely,

Lisa Waddingham
Petroleum Officer
Enc.



	2 GALLON FOAM EXTINGUISHER
	10 POUND DRY POWDER EXTINGUISHER
	SAND BUCKET
	PETROL PUMP
	DIESEL PUMP
	KEROSENE PUMP
	PETROL TANK MANHOLE CHAMBER & NUMBER
	DIESEL TANK
	KEROSENE TANK
	'NO SMOKING' NOTICES
	PETROILER
	PETROL INTERCEPTOR
	LINE OF CANOPY
	TANKER STANDING AREA
	VENT PIPES
	OFFSET FILL POINT
	ISOLATION SWITCH

HERTFORDSHIRE Fire Brigade

JONES & SWINDON
81, WHINBUSH ROAD,
HITCHIN.

DRAWN:- C.A.?

NOT TO SCALE

DATE:- 27. 8 '75

LICENCE
NO 19418

Carroll

Application for a Licence

TO KEEP PETROLEUM SPIRIT (PETROL)

AT FILLING STATION, &c.

To the Council of the above-named

I hereby apply to the Council for a Licence [or, the Renewal of a Licence] to keep Petroleum Spirit (Petrol) [or Fuel or Diesel Oil] on the premises hereinafter described.

1. Full address and description of the premises for which licence is required. (A plan giving sufficient information to identify the site, positions of nearby buildings, etc., and details of the petroleum filling station should accompany this application.)	1. PARTICULARS. YARD WHINBUSH ROAD HITCHIN UNDERGROUND TANK. HAND PUMP OPERATED.
2. State whether any, and what, part of the premises (or of the building of which the premises form part, as the case may be) is, or is intended to be, inhabited.	2. NONE
3. Business or trade carried on, and nature of Goods (if any) usually kept in the premises within which the Petroleum Spirit [and Fuel or Diesel Oil] is proposed to be stored.	3. LORRY SHEDS.
4. Proposed mode of storing Petroleum Spirit. [State whether in 2 gallon cans, or drums, or barrels, underground tanks, or otherwise.]	4. UNDERGROUND TANK.
5. Maximum quantity of Petroleum Spirit (exclusive of petrol in tanks of motor vehicles present on premises) proposed to be kept in the premises at any one time. [If Fuel or Diesel Oil are to be kept in the store, specify kinds and quantities.]	5. 500 gallons.
6. Date of expiry and number of present or last previous licence (if any), and period now applied for.	6. 31/10/1973.
7. If remittance sent, state amount (for scale of fees, see back).	7. £2. 500 gallons.

Name of Applicant (in full) St. Martin's & Sons, Ltd.
 If applying as agent, &c., on behalf of a firm or company, state full particulars. George Edward Martin (Director)

Address St. Andrew's Whinbush Road
Hitchin
 Date 9/10/73 19

Signature of Applicant.....

Serial No.....
 Registered.....
 Licence.....

Notice to Applicant.—This Form, when filled up, should be sent to the Council at the following address:—

Public Health Department,
 Broad Street, Hitchin.

MAX. QUANTITY KEPT		Telephone No.	Date of Licence	Renewed	Receipt No.	Wiring Cert.
Tank	Store	Licencee				
500		A MASTERS & SONS LTD				
		Address of Licencee (If different from below)				
				31/10/74	83307	
		Is Petrol Sold to Public	Yes/No			
Type of Premises and Location of Store		WHINBUSH ROAD HITCHIN				
Remarks						

Kalamazoo
Whinbush Road
709669-511

TITLE BELOW
THIS LINE

WHINBUSH ROAD HITCHIN

A MASTERS & SONS LTD

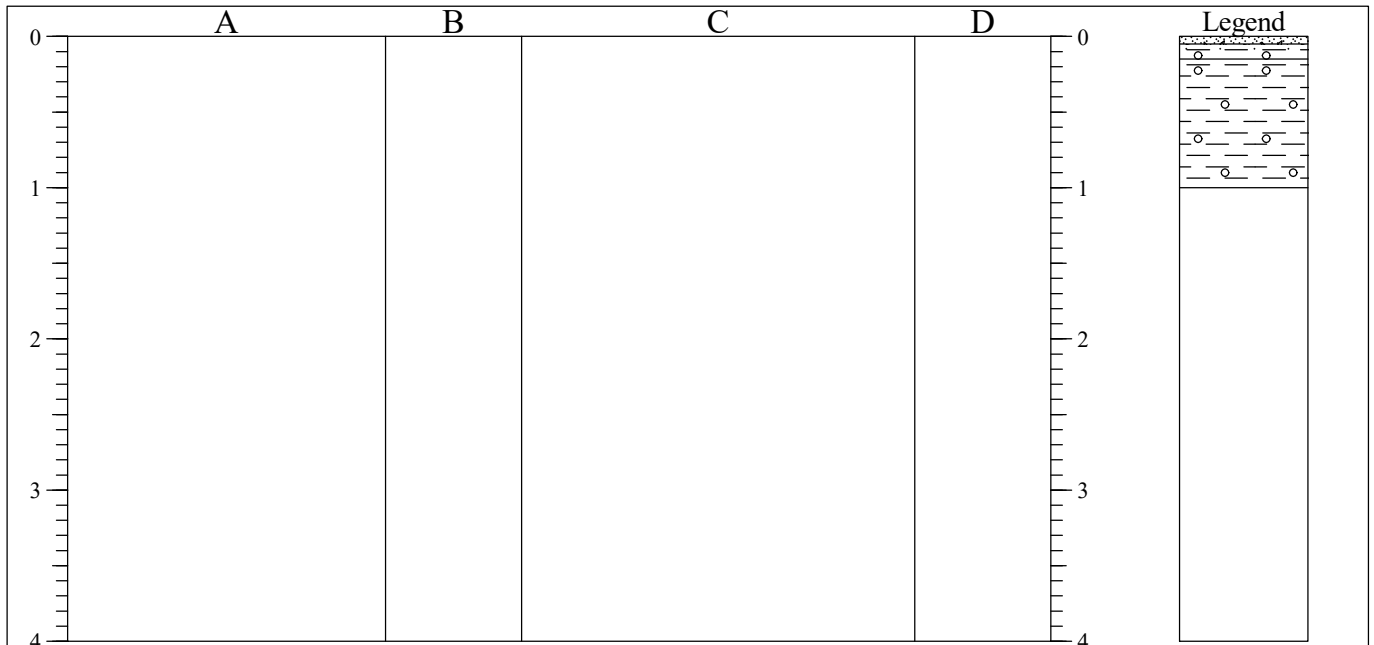
19447

Appendix E

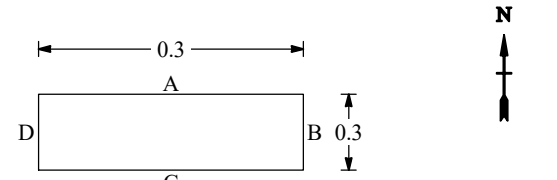
Exploratory Hole Records

TRIAL PIT LOG

Project Further Geo-Environmental Site Investigation - 81/81a Whinbush Road				TRIAL PIT No HP101
Job No 5551	Date 15-11-23	Ground Level (m)	Co-Ordinates ()	
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1



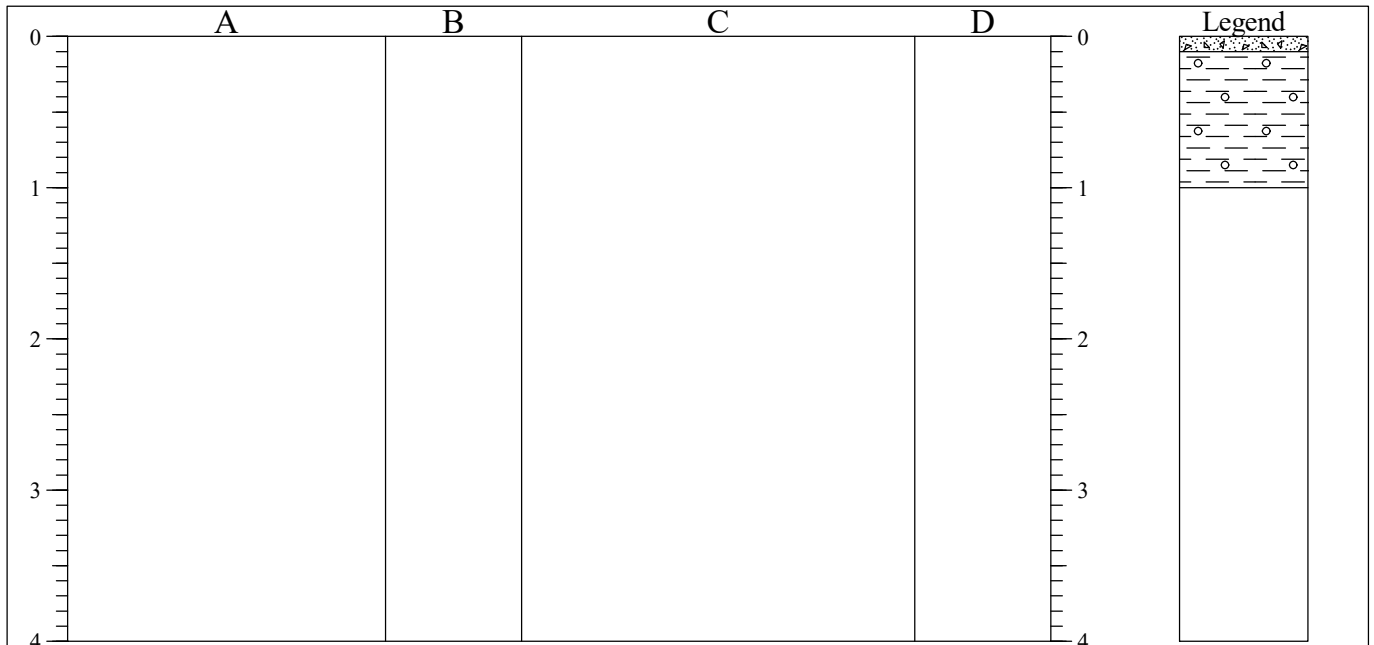
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.05		MADE GROUND: Concrete (Clinker noted on the underside).	0.03	DMG	0.2ppm	
0.05-0.15		MADE GROUND: Soft light yellowish brown very sandy gravelly Clay. Sand is fine to coarse. Gravel comprised sub-rounded to angular, abundant brick, occasional flint and rare clinker fragments.	0.10	DMG	0.3ppm	
0.15-1.00			0.50	DNAT	0.4ppm	
		Very stiff to stiff grey brown gravelly CLAY. Gravel is fine to coarse, sub-rounded to sub-angular, abundant chalk and rare flint fragments.	1.00	DNAT	0.2ppm	

Shoring/Support: N/A Stability: Stable		GENERAL REMARKS No groundwater encountered.
		

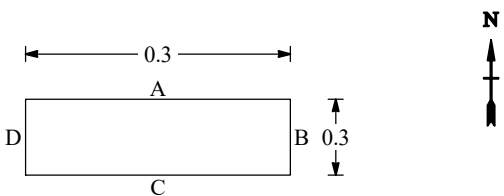
All dimensions in metres Scale 1:50	Client Viva Property Group Ltd	Method/ Plant Used Hand Tools & Breaker	Logged By TI
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TRIAL PIT LOG

Project Further Geo-Environmental Site Investigation - 81/81a Whinbush Road				TRIAL PIT No HP102
Job No 5551	Date 15-11-23	Ground Level (m)	Co-Ordinates ()	
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1



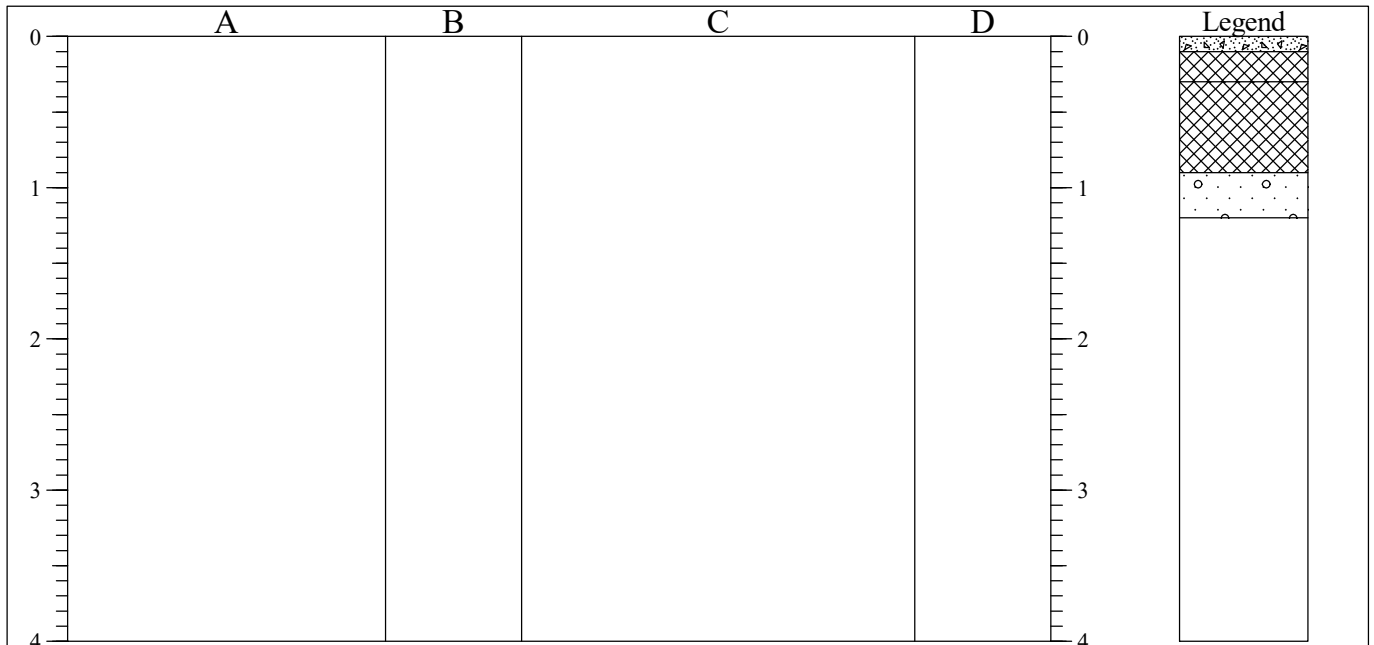
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.10		MADE GROUND: Concrete	0.05	DMG	1.3ppm	
0.10-1.00		Very stiff to stiff grey brown gravelly CLAY. Gravel comprised fine to medium, angular to sub-rounded, abundant chalk fragments and rare flint fragments.	0.25	DNAT	0.5ppm	
		@0.70m bgl becomes more yellowish brown.	0.50	DNAT	0.2ppm	
			0.55	DNAT	0.1ppm	
			0.75	DNAT	0.2ppm	
			1.00	DNAT	0.2ppm	

Shoring/Support: N/A Stability: Stable 				GENERAL REMARKS	
				No groundwater encountered.	

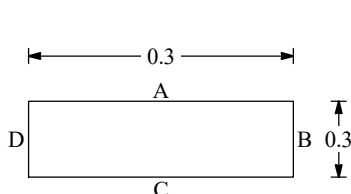
All dimensions in metres Scale 1:50	Client Viva Property Group Ltd	Method/ Plant Used Hand Tools & Breaker	Logged By TI
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TRIAL PIT LOG

Project Further Geo-Environmental Site Investigation - 81/81a Whinbush Road				TRIAL PIT No HP103
Job No 5551	Date 15-11-23	Ground Level (m)	Co-Ordinates ()	
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1



STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.10		MADE GROUND: Concrete	0.05	DMG	0.8ppm	
0.10-0.30		MADE GROUND: Soft brown grey sandy gravelly Clay. Sand is fine to medium. Gravel comprised fine to coarse, sub-angular to sub-rounded, rare to occasional flint fragments and black staining throughout. Hydrocarbon odour noted.	0.15	DMG	0.9ppm	
0.30-0.90			0.25	DMG	1.0ppm	
			0.50	DNAT	0.6ppm	
			0.75	DNAT	0.4ppm	
0.90-1.20		MADE GROUND: Loose dark brown gravelly very clayey SAND. Sand is fine to coarse. Gravel comprised fine to coarse, angular to sub-rounded, occasional flint and rare chalk fragments. Rare fine to medium, sub-angular to angular black charcoal fragments.	1.00	DNAT	0.2ppm	
		Loose, Yellowish brown, slightly clayey gravelly SAND. Sand is fine to coarse. Gravel comprised fine to coarse, angular to sub-angular, rare flint fragments.	1.20	DNAT	0.2ppm	

 Shoring/Support: N/A
 Stability: Stable


GENERAL REMARKS

No groundwater encountered.

 All dimensions in metres
 Scale 1:50

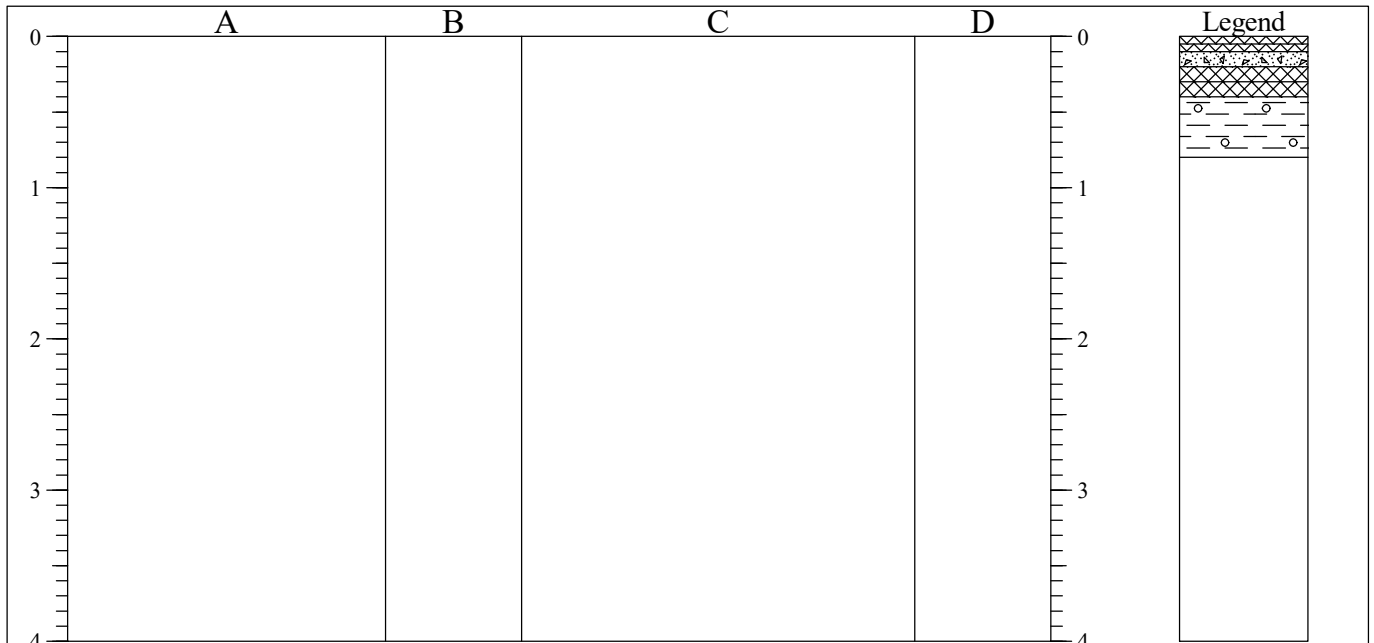
Client Viva Property Group Ltd

 Method/
 Plant Used Hand Tools & Breaker

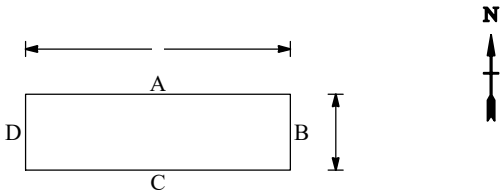
 Logged By
 TI

TRIAL PIT LOG

Project Further Geo-Environmental Site Investigation - 81/81a Whinbush Road				TRIAL PIT No HP104
Job No 5551	Date 22-11-23	Ground Level (m)	Co-Ordinates ()	
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1

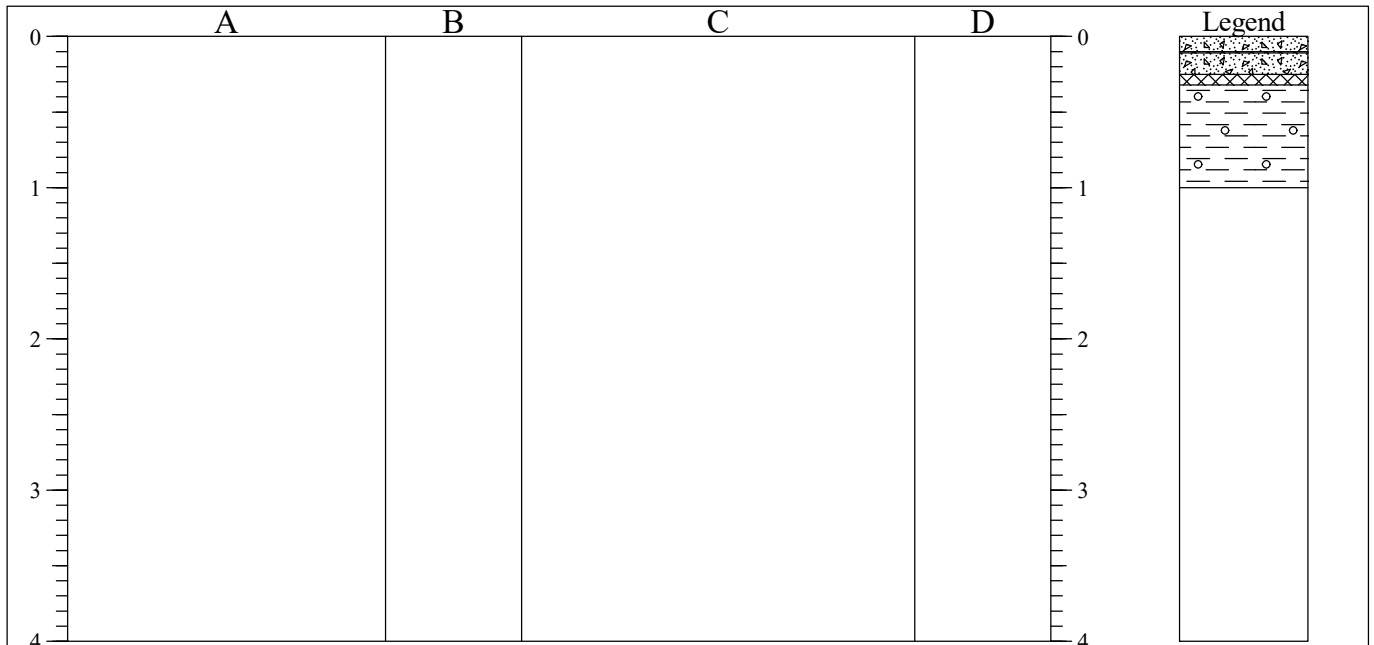


STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.05		MADE GROUND: Brick paving.	0.08		0.1ppm
0.05-0.10		MADE GROUND: Asphalt.	0.15		0.1ppm
0.10-0.20		MADE GROUND: Concrete.	0.25		0.2ppm
0.20-0.30		MADE GROUND: Dense brownish red slightly sandy Gravel. Gravel comprised abundant sub-angular fine to coarse brick fragments and rare sub-angular fine to medium slate fragments. Sand was fine to medium.	0.35		0.2ppm
0.30-0.40			0.50		0.1ppm
0.40-0.80			0.80		0.2ppm
		MADE GORUND: Soft reddish brown gravelly Clay. Gravel comprised numerous sub-angular to sub-rounded fine to medium brick fragments.			
		Soft to firm brown slightly gravelly CLAY. Gravel comprised occasional sub-rounded fine to course chalk fragments and rare sub-rounded fine to medium flint fragments.			

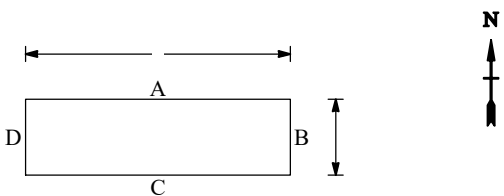
Shoring/Support: Stability:			GENERAL REMARKS No groundwater encountered.	
				
All dimensions in metres Scale 1:50		Client Viva Property Group Ltd	Method/ Plant Used	
			Logged By	

TRIAL PIT LOG

Project Further Geo-Environmental Site Investigation - 81/81a Whinbush Road				TRIAL PIT No HP105
Job No 5551	Date 22-11-23	Ground Level (m)	Co-Ordinates ()	
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.10		MADE GROUND: Concrete (Screed).	0.05		0.1ppm
0.10-0.11		Green DPM.	0.20		0.2ppm
0.11-0.25		MADE GROUND: Concrete.	0.30		0.2ppm
0.25-0.32		MADE GROUND: Soft greyish brown slightly gravelly Clay. Gravel comprised occasional sub-angular fine to medium concrete fragments.	0.50		0.5ppm
0.32-1.00		Soft to firm brown slightly gravelly CLAY. Gravel comprised occasional rounded to sub-angular fine to coarse chalk fragments.	0.80		0.2ppm

Shoring/Support: Stability:			GENERAL REMARKS	
			No groundwater encountered.	
All dimensions in metres Scale 1:50		Client Viva Property Group Ltd	Method/ Plant Used Hand Tools & Breaker	
			Logged By TI	

Appendix F

Chemical
Laboratory Results



Damian Jones
Sevenoaks Environmental Consultancy Ltd
145a Hastings Road
Pembury
Tunbridge Wells
Kent
TN2 4JU

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-14552

Site Reference: Whinbush Further SI

Project / Job Ref: 5551

Order No: 5551

Sample Receipt Date: 28/11/2023

Sample Scheduled Date: 28/11/2023

Report Issue Number: 2

Reporting Date: 07/02/2024

Authorised by:



Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.
This report supersedes 23-14552, issue no.1.

Reason for Re-Issue:

Split Report

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate					
DETS Report No: 23-14552	Date Sampled	22/11/23	22/11/23	22/11/23	22/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP104	HP104	HP105	HP105
Project / Job Ref: 5551	Additional Refs	MG	MG	MG	NAT
Order No: 5551	Depth (m)	0.25	0.35	0.30	0.50
Reporting Date: 07/02/2024	DETS Sample No	687490	687491	687492	687493

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 23-14552	Date Sampled	22/11/23				
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied				
Site Reference: Whinbush Further SI	TP / BH No	HP105				
Project / Job Ref: 5551	Additional Refs	NAT				
Order No: 5551	Depth (m)	0.50				
Reporting Date: 07/02/2024	DETS Sample No	687493				

Determinand	Unit	RL	Accreditation				
EPH Texas (C6 - C8) :	mg/kg	< 0.05	NONE	< 0.05			
HS 1D MS Total							
EPH Texas (>C8 - C10) :	mg/kg	< 1	MCERTS	< 1			
EH 1D Total							
EPH Texas (>C10 - C12) :	mg/kg	< 1	MCERTS	< 1			
EH 1D Total							
EPH Texas (>C12 - C16) :	mg/kg	< 1	MCERTS	< 1			
EH 1D Total							
EPH Texas (>C16 - C21) :	mg/kg	< 1	MCERTS	< 1			
EH 1D Total							
EPH Texas (>C21 - C40) :	mg/kg	< 6	MCERTS	7			
EH 1D Total							
EPH Texas (C6 - C40) :	mg/kg	< 6	NONE	7			
HS 1D MS+EH 1D Total							



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 23-14552	
Sevenoaks Environmental Consultancy Ltd	
Site Reference: Whinbush Further SI	
Project / Job Ref: 5551	
Order No: 5551	
Reporting Date: 07/02/2024	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
687493	HP105	NAT	0.50	12.7	Brown sandy clay with chalk

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ¹/s

Unsuitable Sample ^u/s



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-14552

Sevenoaks Environmental Consultancy Ltd

Site Reference: Whinbush Further SI

Project / Job Ref: 5551

Order No: 5551

Reporting Date: 07/02/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphénylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (all: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (all: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



List of HWOL Acronyms and Operators	
DETS Report No: 23-14552	
Sevenoaks Environmental Consultancy Ltd	
Site Reference: Whinbush Further SI	
Project / Job Ref: 5551	
Order No: 5551	
Reporting Date: 07/02/2024	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
EPH Texas (C10 - C12) - EH_1D_Total
EPH Texas (C12 - C16) - EH_1D_Total
EPH Texas (C16 - C21) - EH_1D_Total
EPH Texas (C21 - C40) - EH_1D_Total
EPH Texas (C6 - C40) - HS_1D_MS+EH_1D_Total
EPH Texas (C6 - C8) - HS_1D_MS_Total
EPH Texas (C8 - C10) - EH_1D_Total
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS



Damian Jones
Sevenoaks Environmental Consultancy Ltd
145a Hastings Road
Pembury
Tunbridge Wells
Kent
TN2 4JU

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-14246

Site Reference: Whinbush Firther SI

Project / Job Ref: 5551

Order No: 5551

Sample Receipt Date: 20/11/2023

Sample Scheduled Date: 20/11/2023

Report Issue Number: 2

Reporting Date: 05/12/2023

Authorised by:



Kevin Old
Operations Director

Dates of laboratory activities for each tested analyte are available upon request.
This report supersedes 23-14246, issue no.1.
Reissue reason: Sample ID & Site name amended.

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Rose Lane
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Maidstone
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Soil Analysis Certificate						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP103	HP103	HP103	HP103
Project / Job Ref: 5551	Additional Refs	MG	MG	MG	NAT	NAT
Order No: 5551	Depth (m)	0.05	0.15	0.25	0.75	1.20
Reporting Date: 05/12/2023	DETS Sample No	686357	686358	686359	686360	686361

Determinand	Unit	RL	Accreditation	(n)			
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
pH	pH Units	N/a	MCERTS	8.2			
Total Cyanide	mg/kg	< 1	NONE	< 1			
Free Cyanide	mg/kg	< 1	NONE	< 1			
Thiocyanate as SCN	mg/kg	< 3	NONE	< 3			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	1252			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.13			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	152		48	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.15		0.05	
Sulphide	mg/kg	< 5	NONE	< 5			
Organic Matter (SOM)	%	< 0.1	MCERTS	8.8			
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	5.1			
Antimony (Sb)	mg/kg	< 1	NONE	4.3			
Arsenic (As)	mg/kg	< 2	MCERTS	26			
Barium (Ba)	mg/kg	< 2.5	MCERTS	228			
W/S Boron	mg/kg	< 1	NONE	1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.8			
Chromium (Cr)	mg/kg	< 2	MCERTS	28			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	56			
Lead (Pb)	mg/kg	< 3	MCERTS	389			
Mercury (Hg)	mg/kg	< 1	MCERTS	26.9			
Nickel (Ni)	mg/kg	< 3	MCERTS	25			
Selenium (Se)	mg/kg	< 2	MCERTS	< 2			
Zinc (Zn)	mg/kg	< 3	MCERTS	667			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP102	HP102	HP102	HP101	HP101
Project / Job Ref: 5551	Additional Refs	MG	MG	NAT	MG	MG
Order No: 5551	Depth (m)	0.05	0.25	1.00	0.03	0.10
Reporting Date: 05/12/2023	DETS Sample No	686362	686363	686364	686365	686366

Determinand	Unit	RL	Accreditation	(n)			
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			Not Detected
pH	pH Units	N/a	MCERTS	10.1			7.9
Total Cyanide	mg/kg	< 1	NONE	< 1			< 1
Free Cyanide	mg/kg	< 1	NONE	< 1			< 1
Thiocyanate as SCN	mg/kg	< 3	NONE	< 3			< 3
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	614			1134
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.06			0.11
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS				
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS				
Sulphide	mg/kg	< 5	NONE	< 5			< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	1.4			1.8
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	0.8			1.1
Antimony (Sb)	mg/kg	< 1	NONE	< 1			1.4
Arsenic (As)	mg/kg	< 2	MCERTS	11			15
Barium (Ba)	mg/kg	< 2.5	MCERTS	28			46
W/S Boron	mg/kg	< 1	NONE	< 1			1.8
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	12			15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			< 2
Copper (Cu)	mg/kg	< 4	MCERTS	14			62
Lead (Pb)	mg/kg	< 3	MCERTS	15			40
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	16			17
Selenium (Se)	mg/kg	< 2	MCERTS	< 2			< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	50			91
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Subcontracted analysis (S)



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Soil Analysis Certificate						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Whinbush Further SI	TP / BH No	HP101	HP101	Stockpile		
Project / Job Ref: 5551	Additional Refs	NAT	NAT	MG		
Order No: 5551	Depth (m)	0.50	1.00	0.00		
Reporting Date: 05/12/2023	DETS Sample No	686367	686368	686369		

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025			Not Detected	
pH	pH Units	N/a	MCERTS			10.4	
Total Cyanide	mg/kg	< 1	NONE			< 1	
Free Cyanide	mg/kg	< 1	NONE			< 1	
Thiocyanate as SCN	mg/kg	< 3	NONE			< 3	
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS			< 200	
Total Sulphate as SO ₄	%	< 0.02	MCERTS			< 0.02	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS			14	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS			0.01	
Sulphide	mg/kg	< 5	NONE			< 5	
Organic Matter (SOM)	%	< 0.1	MCERTS			0.3	
TOC (Total Organic Carbon)	%	< 0.1	MCERTS			0.1	
Antimony (Sb)	mg/kg	< 1	NONE			< 1	
Arsenic (As)	mg/kg	< 2	MCERTS			< 2	
Barium (Ba)	mg/kg	< 2.5	MCERTS			12	
W/S Boron	mg/kg	< 1	NONE			< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS			< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS			4	
Chromium (hexavalent)	mg/kg	< 2	NONE			< 2	
Copper (Cu)	mg/kg	< 4	MCERTS			8	
Lead (Pb)	mg/kg	< 3	MCERTS			6	
Mercury (Hg)	mg/kg	< 1	MCERTS			< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS			< 3	
Selenium (Se)	mg/kg	< 2	MCERTS			< 2	
Zinc (Zn)	mg/kg	< 3	MCERTS			28	
Total Phenols (monohydric)	mg/kg	< 2	NONE			< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP102	HP101	HP101	Stockpile
Project / Job Ref: 5551	Additional Refs	MG	MG	MG	MG	MG
Order No: 5551	Depth (m)	0.15	0.25	0.03	0.10	0.00
Reporting Date: 05/12/2023	DETS Sample No	686358	686363	686365	686366	686369

Determinand	Unit	RL	Accreditation	(n)				
Naphthalene	mg/kg	< 0.1	MCERTS	0.28	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.44	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	3.66	< 0.1	0.23	0.19	0.12
Anthracene	mg/kg	< 0.1	MCERTS	0.60	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	10.20	< 0.1	0.31	0.31	0.18
Pyrene	mg/kg	< 0.1	MCERTS	10.60	< 0.1	0.44	0.35	0.16
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	6.45	< 0.1	0.14	0.17	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	6.07	< 0.1	0.19	0.19	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	11.20	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	2.75	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	8.80	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	4.78	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.85	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	3.99	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	71.3	< 1.6	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP103	HP103	HP103	HP103
Project / Job Ref: 5551	Additional Refs	MG	MG	MG	NAT	NAT
Order No: 5551	Depth (m)	0.05	0.15	0.25	0.75	1.20
Reporting Date: 05/12/2023	DETS Sample No	686357	686358	686359	686360	686361

Determinand	Unit	RL	Accreditation	(n)			
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	0.15		< 0.05	< 0.05
EPH Texas (>C8 - C10) : EH 1D Total	mg/kg	< 1	MCERTS	3		3	6
EPH Texas (>C10 - C12) : EH 1D Total	mg/kg	< 1	MCERTS	5		1	< 1
EPH Texas (>C12 - C16) : EH 1D Total	mg/kg	< 1	MCERTS	52		11	< 1
EPH Texas (>C16 - C21) : EH 1D Total	mg/kg	< 1	MCERTS	330		186	24
EPH Texas (>C21 - C40) : EH 1D Total	mg/kg	< 6	MCERTS	< 6		2819	519
EPH Texas (C6 - C40) : HS 1D MS+EH 1D Total	mg/kg	< 6	NONE	390		3021	549

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Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP102	HP102	HP102	HP101	HP101
Project / Job Ref: 5551	Additional Refs	MG	MG	NAT	MG	MG
Order No: 5551	Depth (m)	0.05	0.25	1.00	0.03	0.10
Reporting Date: 05/12/2023	DETS Sample No	686362	686363	686364	686365	686366

Determinand	Unit	RL	Accreditation	(n)			
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
EPH Texas (>C8 - C10) : EH 1D Total	mg/kg	< 1	MCERTS	4	2	< 1	< 1
EPH Texas (>C10 - C12) : EH 1D Total	mg/kg	< 1	MCERTS	3	< 1	< 1	< 1
EPH Texas (>C12 - C16) : EH 1D Total	mg/kg	< 1	MCERTS	37	3	< 1	2
EPH Texas (>C16 - C21) : EH 1D Total	mg/kg	< 1	MCERTS	273	34	< 1	132
EPH Texas (>C21 - C40) : EH 1D Total	mg/kg	< 6	MCERTS	1912	401	< 6	1904
EPH Texas (C6 - C40) : HS 1D MS+EH 1D Total	mg/kg	< 6	NONE	2228	441	< 6	2037



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Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Whinbush Further SI	TP / BH No	HP101	HP101	Stockpile		
Project / Job Ref: 5551	Additional Refs	NAT	NAT	MG		
Order No: 5551	Depth (m)	0.50	1.00	0.00		
Reporting Date: 05/12/2023	DETS Sample No	686367	686368	686369		

Determinand	Unit	RL	Accreditation				
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE		< 0.05	< 0.05	
EPH Texas (>C8 - C10) : EH 1D Total	mg/kg	< 1	MCERTS		< 1	< 1	
EPH Texas (>C10 - C12) : EH 1D Total	mg/kg	< 1	MCERTS		< 1	< 1	
EPH Texas (>C12 - C16) : EH 1D Total	mg/kg	< 1	MCERTS		< 1	< 1	
EPH Texas (>C16 - C21) : EH 1D Total	mg/kg	< 1	MCERTS		3	< 1	
EPH Texas (>C21 - C40) : EH 1D Total	mg/kg	< 6	MCERTS		63	< 6	
EPH Texas (C6 - C40) : HS 1D MS+EH 1D Total	mg/kg	< 6	NONE		66	< 6	



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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP103	HP103	HP103	HP102
Project / Job Ref: 5551	Additional Refs	MG	MG	NAT	NAT	MG
Order No: 5551	Depth (m)	0.15	0.25	0.75	1.20	0.05
Reporting Date: 05/12/2023	DETS Sample No	686358	686359	686360	686361	686362

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	5			
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	15	23			
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	151	247			
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	3271	5437			
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	3437	5711			
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	3	< 2			
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	6	6			
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	18	23			
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	145	142			
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	1117	1060			
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	1289	1231			
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	4726	6942			

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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP102	HP102	HP101	HP101	HP101
Project / Job Ref: 5551	Additional Refs	MG	NAT	MG	MG	NAT
Order No: 5551	Depth (m)	0.25	1.00	0.03	0.10	0.50
Reporting Date: 05/12/2023	DETS Sample No	686363	686364	686365	686366	686367

Determinand	Unit	RL	Accreditation	(n)		
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01		< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05		< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2		< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2		< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	7		< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	289		< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	2987		< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	3283		< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01		< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05		< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2		< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2		< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	5		< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	131		< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	1292		< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	1428		< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	4712		< 42



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-14246	Date Sampled	15/11/23				
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied				
Site Reference: Whinbush Further SI	TP / BH No	HP101				
Project / Job Ref: 5551	Additional Refs	NAT				
Order No: 5551	Depth (m)	1.00				
Reporting Date: 05/12/2023	DETS Sample No	686368				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE				
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE				
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS				
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS				
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS				
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS				
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS				
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE				
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE				
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE				
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS				
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS				
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS				
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS				
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS				
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE				
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE				



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Rose Lane
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Maidstone
Kent ME17 2JN
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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP103	HP101	HP101	
Project / Job Ref: 5551	Additional Refs	MG	MG	MG	NAT	
Order No: 5551	Depth (m)	0.15	0.25	0.03	0.50	
Reporting Date: 05/12/2023	DETS Sample No	686358	686359	686365	686367	

Determinand	Unit	RL	Accreditation	(n)			
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	3	6	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	9	22	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	7	21	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Volatile Organic Compounds (VOC)						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP103	HP103	HP103	HP103	HP102
Project / Job Ref: 5551	Additional Refs	MG	MG	NAT	NAT	MG
Order No: 5551	Depth (m)	0.15	0.25	0.75	1.20	0.05
Reporting Date: 05/12/2023	DETS Sample No	686358	686359	686360	686361	686362

Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloromethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Chloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromomethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloroform	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Dibromomethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
TAME	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethyl Benzene	ug/kg	< 2	MCERTS	3	6	< 2	< 2	< 2
m,p-Xylene	ug/kg	< 2	MCERTS	9	22	< 2	< 2	< 2
o-Xylene	ug/kg	< 2	MCERTS	7	21	< 2	< 2	< 2
Styrene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromoform	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5	9	< 5	< 5	< 5
Bromobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	10	32	< 5	< 5	< 5
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	15	57	< 5	< 5	< 5
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Volatile Organic Compounds (VOC)						
DETS Report No: 23-14246	Date Sampled	15/11/23	15/11/23	15/11/23	15/11/23	15/11/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Whinbush Further SI	TP / BH No	HP102	HP102	HP101	HP101	HP101
Project / Job Ref: 5551	Additional Refs	MG	NAT	MG	NAT	NAT
Order No: 5551	Depth (m)	0.25	1.00	0.10	0.50	1.00
Reporting Date: 05/12/2023	DETS Sample No	686363	686364	686366	686367	686368

Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloromethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Chloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromomethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloroform	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Dibromomethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
TAME	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethyl Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
m,p-Xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-Xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Styrene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromoform	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-14246

Sevenoaks Environmental Consultancy Ltd

Site Reference: Whinbush Further SI

Project / Job Ref: 5551

Order No: 5551

Reporting Date: 05/12/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
686357	HP103	MG	0.05	6.7	Light brown concrete
686358	HP103	MG	0.15	16.6	Brown sandy clay with stones
686359	HP103	MG	0.25	13.2	Brown sandy clay with stones and brick
686360	HP103	NAT	0.75	10.9	Brown sandy clay with stones
686361	HP103	NAT	1.20	9.2	Brown sandy clay with stones
686362	HP102	MG	0.05	6.2	Brown sandy clay with stones and concrete
686363	HP102	MG	0.25	11.7	Brown sandy clay with stones and chalk
686364	HP102	NAT	1.00	12.3	Light brown sandy clay with stones and chalk
686365	HP101	MG	0.03	1.5	Brown concrete
686366	HP101	MG	0.10	11.9	Brown sandy clay with chalk and brick
686367	HP101	NAT	0.50	12.7	Brown sandy clay with chalk
686368	HP101	NAT	1.00	10.7	Brown sandy clay with stones and chalk
686369	Stockpile	MG	0.00	3.3	Brown gravelly sand with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{4/5}



DETS Ltd
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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-14246

Sevenoaks Environmental Consultancy Ltd

Site Reference: Whinbush Further SI

Project / Job Ref: 5551

Order No: 5551

Reporting Date: 05/12/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



List of HWOL Acronyms and Operators	
DETS Report No: 23-14246	
Sevenoaks Environmental Consultancy Ltd	
Site Reference: Whinbush Further SI	
Project / Job Ref: 5551	
Order No: 5551	
Reporting Date: 05/12/2023	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
EPH Texas (C10 - C12) - EH_1D_Total
EPH Texas (C12 - C16) - EH_1D_Total
EPH Texas (C16 - C21) - EH_1D_Total
EPH Texas (C21 - C40) - EH_1D_Total
EPH Texas (C6 - C40) - HS_1D_MS+EH_1D_Total
EPH Texas (C6 - C8) - HS_1D_MS_Total
EPH Texas (C8 - C10) - EH_1D_Total
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Appendix G

General Limitations and Exceptions

General Limitations and Exceptions

1. The advice given in this report with respect to contaminated land/pollution is based on the guidelines available at the time of writing.
2. This report does not include for an assessment of above-ground structures on site for the presence of potential asbestos containing materials.
3. The Client is advised that the conditions observed on site by SEC at the time of the investigation or assessment is subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance or investigation and they may subsequently have become observable.
4. Comments made relating to land gas or groundwater conditions are based on observations made at the time of an investigation unless otherwise stated. However, land gas or groundwater conditions may vary as a result of seasonal or other effects. It would be prudent to conduct groundwater monitoring.
5. This assessment may be subject to amendment in light of additional information becoming available.
6. The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from chemical testing laboratories, and which SEC has assumed are correct. Nevertheless, SEC cannot and does not guarantee the authenticity or reliability of the information it has relied upon. SEC can accept no responsibility for inaccuracies within the data supplied by other parties.
7. This report is written in the context of an agreed scope of work between SEC and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the assessment or report in whole or part may be necessary after its original submission.
8. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.
9. SEC believes that providing information about limitations is essential to help the Client identify and thereby manage risks.
10. The copyright of written materials supplied shall remain the property of SEC but with a royalty free perpetual licence, granted to the Client on payment in full of any outstanding monies.
11. SEC does not provide legal advice and the advice of the Client's legal advisors may also be required.

12. No allowance has been made in this report for testing which may be required for waste categorisation prior to the removal of any material from site for disposal.
13. The report is issued on the condition that SEC will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the boreholes or trial pits which have not been shown by the borehole, trial pits or other tests carried out during the investigation.
14. In addition, SEC will not be liable for any loss whatsoever arising directly or indirectly from any opinion given on the possible configuration of strata both between the borehole and/or trial pit positions and/or below the maximum depth of the investigation. Such opinions, where given, are for guidance only.
15. No person other than the client to whom this report is addressed, shall rely on it in any respect and no duty of care shall be owed to any such third party.
16. Copyright of this Report remains with SEC and in addition we will not accept any responsibility for the report and recommendations given until our invoice is settled in full.
17. That this investigation has relied on information from a discrete number of exploratory hole locations and allowances should be made for the variation in ground conditions between these locations and within the site boundary.
18. It should be noted that the Made Ground depth recorded above is that encountered within the trial pits undertaken during the phase of work to which this report pertains. Owing to the variable nature and unknown deposition criteria of Made Ground it is possible that deeper or more extensive areas of Made Ground may exist at this site which have not been revealed by the current work.
19. Should the proposed end use or site layout change then a reassessment of potential risks will be required.