

Validation Report for Remedial Work

At:

Former St Johns Ambulance HQ,
Armoury Drive,
Gravesend,
DA12 1NB

For:

Longley Group Ltd

Ref: 4768 23 01 26 Rpt 01 REV A AS MT

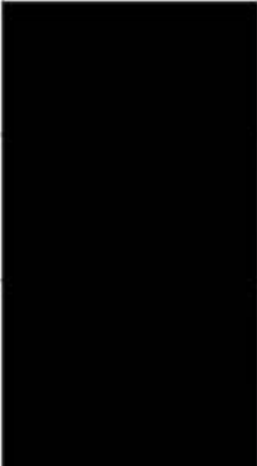
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Association of Geotechnical &
Geoenvironmental Specialists



Sevenoaks
Environmental
Consultancy Ltd

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1.0 Introduction

Sevenoaks Environmental Consultancy Ltd (SEC) was commissioned by Longley Group Ltd to produce a Validation Report for the contaminated land remedial works conducted at Former Saint Johns Ambulance HQ, Armoury Drive, Gravesend, DA12 1NB (see Appendix A Figure 1 - Site Location Plan) as part of the site's redevelopment. The scope of work covered by this report is described in SEC's proposal to the Client dated 22nd July 2022 (Ref: 4768 22 07 22 Ltr 01 FPA 01 Rev B EH SP).

The proposed development comprised the demolition of an existing brick building and the construction of 2 no. one bedroom bungalows and a two-storey block of flats with associated parking and areas of soft landscaping (see Appendix A Figure 2 - Proposed Site Layout Plan).

This report has been produced to help satisfy Condition 5 of the associated planning application at this site (Ref: 20200561), further to the findings of the previous Geo-Environmental reports referenced below;

- 1) Phase I Geo-Environmental Desk Study Report (Ref: 17753/PIR_R26) dated August 2019 by Soils Limited;
- 2) Preliminary Geo-Environmental Site Investigation Report (Ref: 4551 22 04 21 Rpt 06 Rev B EH CW), dated April 2022 by SEC Ltd;
- 3) WM3 Waste Soil Disposal Assessment (Ref: 4768 22 06 27 Ltr Rpt 01 Rev A EH SP), dated June 2022 by SEC Ltd;
- 4) Supplementary Geo-Environmental Site Investigation Report (Ref: 4768 22 08 24 Ltr Rpt 02 Rev A AS SP), dated August 2022 by SEC Ltd;
- 5) Ground Gas Risk Addendum Letter Report (Ref: 4551 22 07 11 Ltr Rpt 01 Rev B AS SP) dated November 2022;
- 6) Remediation Strategy (Ref: 4768 22 04 29 Rpt 02 Rev B BD SP), dated November 2022 by SEC Ltd; and
- 7) Technical Addendum to the Remedial Strategy (Ref: 4551 22 07 04 Tech Adden 01 Rev A BD SP) dated July 2022 by SEC Ltd.

This current report should be read in conjunction with the previous Geo-Environmental reports referenced above.

2.0 Review of Previous Reports

2.1 INTRODUCTION

Previous contaminated land assessment reports for the site have been carried out by Soils Ltd and SEC. Whilst the following provides a brief summary of the geo-environmental findings recorded by the previous reports reference should be made to the aforementioned documents for a more comprehensive view of the results and their implications.

2.2 Phase I Geo-Environmental Desk Study Report (Ref: 17753/PIR_R26) dated August 2019 by Soils Limited;

The previous Desk Study Report was written as part of a pre-planning exercise based on a proposed end use for the site consisting of four different possible residential redevelopment options. It was understood that the preferred development was based on 2No. bungalows and 1No. block of 2-storey flat which is the same scheme that is proposed currently.

The site layout and usage noted in the previous Desk Study Report was generally consistent with the existing layout at the time of writing this current document except for the commencement of demolition of the St Johns Ambulance garage building.

Historically the Desk Study reported that the site comprised an undeveloped plot until 1874 when the water tower and garage were built. The site then remained unchanged until present day. Off site, between 1866 to 1874 a chalk pit was identified ~200m to the north of the site and a rail line ~140m north, with several tanks noted between 1954 to 1981 ~76m northeast.

The published geology locally to the site was recorded to be Thanet Formation bedrock over Lewes Nodular Chalk Formation with no overlying superficial deposits. The Thanet Formation was classified as a Secondary A Aquifer and the Lewes Chalk was noted to be a Principal Aquifer.

Potential on site sources identified included an electrical substation from 1951 [although it was noted that based on the site area for the current redevelopment scheme, the substation is located outside of the site footprint and is therefore actually off site], site use as Gravesend Barracks with a garage between 1874 and 1981 and an above ground storage water tank since 1936.

Many potential off-site sources were listed in the desk study and these have been summarised to include; an infilled chalk pit ~167m north east of the site between 1866 and 1897, tanks identified ~48m and 76m east and north east between 1954 and 1993 respectively and a garage identified ~142m north west between 1954 and 1999.

2.3 Preliminary Geo-Environmental Site Investigation Report (Ref: 4551 22 04 21 Rpt 06 Rev B EH CW), dated April 2022 by SEC Ltd;

Further to the findings of the desk study report a preliminary intrusive site investigation was conducted by SEC. The site layout during the site investigation was noted to be generally consistent with that described in the earlier Desk Study with the exception of the recent demolition work. The site

investigation was based upon the same residential end use as the previous desk study. It is noted however that a gas leak had occurred locally to the site prior to the site investigation which had reportedly been repaired by Southern Gas Networks although the manhole in Albery Murray Close to the north of the site was noted to still exhibit a mercaptan odour.

The scope of the site investigation included the conduct of 5 No. mini boreholes up to 4m bgl (WS01 – WS05) using a Continuous Dynamic Sampler drill rig. Environmental ground gas and groundwater monitoring wells were installed within the boreholes to facilitate ground gas and groundwater monitoring. Soil samples recovered from the boreholes were sent for laboratory analysis for a range of contaminants including metals, asbestos (presence / absence and quantification), speciated PAHs, TPH, phenols, VOCs and WAC. 3 No. groundwater monitoring visits were conducted as part of the assessment. Ground gas monitoring to inform a ground gas risk assessment was conducted however is on going at the current time of writing.

The ground conditions identified on site generally comprised Made Ground up to between 0.25m bgl (WS04) and 1.35m bgl (WS05) which was relatively homogenous and consisted of gravelly Clay with flint, brick, concrete, tile and tarmac fragments. Underlying the Made Ground natural Sand deposits were encountered and proven up to 4.45m bgl.

Visual and olfactory observations indicative of potential ground contamination included VOC headspace test results up to 40.8ppm (WS2 at 3.5m bgl) and a hydrocarbon odour. Slightly elevated VOCs were identified within a sample recovered from WS02 at 3.50m bgl. Additionally potential cement bonded asbestos sheeting fragments were identified within TP01 (0.2m bgl) and TP03 (0.5m bgl).

Based upon the findings of the assessment the following sources of contamination were identified;

- Potentially coal tar rich tarmac surfacing associated with the existing site access road up to 0.15m bgl (WS01) which exhibited elevated concentrations of PAHs including benzo(a)pyrene up to 48.8mg/kg and TPH up to 2780mg/kg;
- Made Ground identified across the site up to 1.35m bgl (WS05) generally comprising gravelly Sand / sandy Gravel with varying frequencies of flint, brick and concrete inclusions, fragments of cement bonded asbestos sheeting (TP01 and TP03) and elevated concentrations of lead (up to 797mg/kg TP02 at 0.3m bgl) and PAHs including benzo(a)pyrene (up to 17.6mg/kg TP02 at 0.3m bgl);
- Former site use as a garage, with an above ground tank and as part of a barracks; and
- Potentially elevated concentrations of ground gases (reported separately within a follow on Ground Gas Risk Assessment Addendum, reviewed below)

Potential off-site sources of contamination identified included;

- An infilled Chalk Pit identified ~167m northeast of the site between 1954 - 1981;
- Milton Barracks identified ~140m east of the site between 1947 – 1992;
- A Tank identified ~76m northeast of the site between 1954 – 1993;

- Gravesend Barracks identified ~23m northeast of the site between 1909 – 1981;
- A Tank identified ~49m southeast of the site between 1954 – 1978; and
- An Electrical Substation ~25m north of the site since 1951.

To help mitigate potential risks to receptors associated with sources of contamination the following recommendations were provided;

- That the remaining ground gas monitoring be completed in order to inform the Ground Gas Risk Assessment Addendum to supplement the findings of this assessment and to inform the requirement for any protective measures within the building design;
- That prior to the proposed development, all general rubbish and drums of fuel should be appropriately removed from site and disposed of at suitably licensed facilities (all waste disposal documents to be retained);
- That the existing potentially coal tar rich tarmac surfacing be disposed of from site to suitably licensed waste management facilities as hazardous waste under waste code 17 03 01. All waste disposal documentation should be retained for inclusion within a future Validation Report. To help facilitate appropriate waste disposal from site, the tarmac surfacing should be carefully excavated and segregated from the underlying material under the supervision of an Environmental Consultant;
- That a watching brief be maintained by an Environmental Consultant during the removal of the hardstanding across the site and in particular the ground slab of the former buildings. Confirmatory validation samples should be recovered for analysis to confirm an absence of impact associated with contaminants of concern including metals, PAHs, hydrocarbons and asbestos;
- That remedial excavation be conducted to remove the lead and asbestos impacted Made Ground identified on site for appropriate disposal to suitably licensed facilities. Remedial excavation should be overseen by an Environmental Consultant and be certified by soil validation sample analysis from the sides and base of the remedial excavation. Any imported backfill material (e.g. engineered fill / aggregate, subsoil or topsoil) should be chemically validated in relation to suitability for use on site as part of the proposed development, including the review of the supplier's chemical batch data prior to import and chemical analysis of validation samples following importation to site;
- That an asbestos picking exercise be conducted during the excavation of asbestos impacted material locally to TP01 and TP03, to remove fragments of cement bonded asbestos sheeting for separate disposal. Asbestos picking should be conducted by Category A & B Asbestos Awareness trained operatives and to help mitigate potential Health and Safety risks appropriate PPE / RPE should be worn by operatives during the remedial excavation and asbestos picking, including disposable suits and FFP3 masks;
- That all waste arisings should be disposed of from site appropriately in accordance with EA WM3 guidance. The impacted Made Ground should be disposed of as Non-Hazardous waste

under waste code 17 05 04 and picked asbestos containing material fragments as Hazardous waste under waste code 17 06 05. All arisings should be segregated based on waste stream types and according to waste classification. All waste disposal tickets should be retained;

- That a "clean" cover system be provided to a minimum thickness of 475mm across landscaped / garden areas. The cover system should comprise the provision of a high visibility geotextile marker layer (permeable geotextile or similar) overlain by imported certified "clean" topsoil to the required minimum thickness. Subject to existing and proposed site levels it may be necessary to remove some existing soils to facilitate the cover system. Prior to delivery of any imported topsoil to site, the supplier's chemical batch data should be provided to an Environmental Consultant for review and following provision of the cover system to landscaped areas it should be validated by an Environmental Consultant. This should include chemical analysis of a representative number of imported cover system validation samples based on a minimum frequency of 1 validation sample per garden / landscaped area as a minimum or 1 sample per 50m³ per material source for larger areas. In addition the thickness of cover system should be certified;
- That the water supply pipework included within the design of the proposed development should be chemically resistant barrier pipe. Alternatively the water supplier should be contacted to confirm chemically resistant barrier pipe is not required;
- That groundworkers should wear appropriate PPE/RPE, work in well ventilated areas, avoid confined spaces, avoid contact with soil and groundwater, not smoke, adopt high standards of personal hygiene, and operate with due care;
- That a Discovery Strategy should be implemented on site during the redevelopment work which should include for the immediate reporting of any potential indicators of ground or water contamination e.g. asbestos fragments, ash / clinker or hydrocarbon odours for separate assessment by an Environmental Consultant;
- That prior to the conduct of any remedial work, a Remedial Method Statement should be approved by the Regulators; and
- That any remedial work conducted on site as part of the proposed development should be certified and documented within a Validation Report produced by an Environmental Consultant.

2.4 WM3 Waste Soil Disposal Assessment (Ref: 4768 22 06 27 Ltr Rpt 01 Rev A EH SP), dated June 2022 by SEC Ltd;

A WM3 Waste Soil Disposal Assessment was produced by SEC, to help inform appropriate Waste Classification for the disposal of arisings generated associated with the clearance of the chamber identified beneath the former water tower.

The ~2.5m diameter chamber was identified following demolition of the former water tower, which was infilled with soil. The client's initial solution to the chamber involved digging the infill material out and backfilling the chamber however, given the chamber was identified to 13m depth an alternative solution was devised involving capping the chamber with concrete and steels. Prior to this solution however,

Made Ground initially removed from the chamber was analysed for a general suite of contaminants including metals, phenols, PAHs, TPH, WAC and asbestos to help inform disposal and risks.

The HazWasteTM Waste Classification Assessment classified the collected Made Ground samples as Non-Hazardous Waste under waste code 17 05 04 and the Made Ground was not considered to pose a risk to receptors if left in situ and capped by concrete.

Based on the findings it was recommended that all waste arisings generated during the cleaning out of the chamber should be segregated disposed of appropriately in accordance with the findings of this report to suitably licensed waste disposal facilities. Additionally, all waste disposal tickets should be retained.

At the time it was decided to cap the chamber only a small volume of Made Ground had been removed for disposal.

2.5 Supplementary Geo-Environmental Site Investigation Report (Ref: 4768 22 08 24 Ltr Rpt 02 Rev A AS SP), dated August 2022 by SEC Ltd;

Further to the findings of the Preliminary Geo-Environmental Site Investigation Report a supplementary investigation was conducted to better delineate the cement bonded asbestos sheeting fragments identified in the Made Ground at TP03. SEC conducted 9 No. hand dug trial pits (TP03A – TP03I) up to 1.20m bgl to facilitate the collection of soils samples for asbestos analysis and to visually identify the presence of any cement bonded asbestos sheeting fragments.

Soil samples were analysed for asbestos presence / absence and identified no loose fibres within any of the samples analysed from the 9 No. hand pits. Additionally, no further observations of asbestos fragments were noted in the 9 No. hand pits. Therefore, the asbestos impacted Made Ground was considered to affect an area associated locally to TP03 only.

Based on these findings, it was recommended that the asbestos impacted Made Ground be excavated and removed prior to any intrusive groundworks within the vicinity of TP03. Removal of the impacted material was recommended to be conducted under a Watching Brief by a suitably qualified Environmental Consultant. Soil validation samples should be collected and chemically analysed from the sides and base of the resulting remedial excavations in order to certify source removal.

Additionally, any imported backfill material (e.g. engineered fill / aggregate, subsoil or topsoil) should be chemically validated in relation to suitability for use on site as part of the proposed development, including the review of suppliers chemical batch data prior to import and chemical validation samples following importation to site.

2.6 Ground Gas Risk Addendum Ltr Rpt (Ref: 4551 22 07 11 Ltr Rpt 01 Rev B AS SP) dated November 2022; and

A Ground Gas Risk Assessment Addendum Report was produced to provide comment on the environmental ground gas monitoring conducted. SEC conducted 9 No. environmental ground gas monitoring visits over the course of approximately 5 No. months including 2 No. visits undertaken at periods of low atmospheric pressure. It was also noted during these visits that the gas leak previously identified within the adjacent manhole was noted to continue throughout the monitoring and olfactory

observations of mercaptan were identified within the adjacent manhole. The environmental ground gas monitoring visits conducted identified elevated concentrations of carbon dioxide up to 7.3% by Vol, depleted oxygen levels down to 11.8% by Vol and negligible flow rates up to -0.4l/hr. Methane concentrations were generally low although spikes up to ~45% were recorded. This spike in methane was identified for the first few seconds of monitoring at WS05 and then the methane concentration reduced back down to 0% by Vol.

As a result of these findings and following comments provided by the EHO, SEC conducted a further 3 No. environmental ground gas monitoring visits following a report provided by Southern Gas Networks that the previous gas leak had been fixed. The 3 No. visits conducted identified no elevated concentrations of methane, concentrations of carbon dioxide up to 5.8% by Vol, depleted oxygen levels down to 14.1% by Vol and negligible flow rates up to -0.3l/hr. The concentrations identified across the 11 No. visits provide a ground gas screening value of 0.0292l/hr for the site, which corresponds to Characteristic Situation 1 of current CIRIA C665 guidance.

Based on the combined findings of the environmental ground gas monitoring conducted it was recommended that ground gas protective measures in accordance with Characteristic Situation 2 be implemented on site on a precautionary basis.

Based upon the assumption that the proposed building will comprise a Type A Building as described in the BS 8485:2015 guidance i.e. private housing with small sized rooms, it was recommended that at least 2 No. different design measures be employed within the design of the proposed building in order to reach a minimum gas protection score of 3.5 points. Inclusion of a passively vented sub-floor void and low permeability hydrocarbon resistant gas protection membrane within the design would achieve the required points (however please refer to Tables 5, 6 and 8 of the BS 8485:2015 guidance for further details). All joints and penetrations should be appropriately sealed and that protective measures should be fitted appropriately in accordance with the manufacturer's specification and current guidance including BRE414 and BS8485. The production of the Ground Gas Mitigation and Verification Plan should be conducted by a suitably qualified third body Ground Gas Specialist prior to implementation.

2.7 Remediation Strategy (Ref: 4768 22 04 29 Rpt 02 Rev B BD SP), dated November 2022 by SEC Ltd;

Further to the findings of the previous Geo-Environmental Reports, SEC produced a Remediation Strategy to present the proposed remedial strategy to be adopted during the redevelopment of the site.

It was recommended that prior to the undertaking any remedial works onsite that the site be cleared to slab level with dirty and clean areas established on site based on known contamination distribution and the production of a Discovery Strategy.

Given that a coal tar rich tarmac driveway and hotspots of Made Ground across the site had been impacted with loose asbestos chrysotile fibres, asbestos containing material (ACM) fragments and elevated concentrations of PAH, a Watching Brief by an Environmental Consultant was proposed during the remedial excavation of the impacted material from across the site to support segregation and appropriate waste disposal of the waste streams generated, to collect soil validation samples and to document remedial works undertaken for the purpose of a subsequent Validation Report required for Regulatory approval.

Tarmac Surfacing and Areas of Hardstanding

Under the supervision of an Environmental Consultant, coal tar rich hardstanding, including PAH and TPH impacted sub-base material, should be carefully peeled back to minimise cross contamination with underlying soils. The peeled back tarmac and sub-base material should be segregated and stockpiled for disposal of site to a suitably licensed waste facility. Representative confirmatory validation samples should be collected from newly exposed ground following the removal of the tarmac and associated sub-base material for chemical analysis to confirm absence of contaminants of concern including PAHs, hydrocarbons, metals and asbestos.

Made Ground Impacted by Asbestos

The Remediation Strategy prescribed that remedial excavation of asbestos impacted material should be conducted down to a minimum of 0.9m bgl associated TP03 and to chase out the asbestos fragment contamination. The excavation of the asbestos impacted Made Ground should be conducted under controlled conditions in compliance with HSE requirements as previously advised. Due to the inadvertent excavation of asbestos fragment impacted material associated with TP01 visual inspection of the remaining excavated surface and the conducted of hand pits providing representative coverage across the affected area and collect validation samples to confirm an absence of asbestos within the newly exposed soils. The resulting stockpile of Made Ground containing cement asbestos sheeting fragments that has been created at the eastern end of the site should be disposed of from site as hazardous waste under dual waste code 17 06 05* and 17 05 03*.

Other control measures such as dust suppression including the use of an airless sprayer and surfactant and reassurance asbestos air monitoring should be undertaken by an independent laboratory during the excavation of asbestos impacted Made Ground to help mitigate risks to workers and neighbouring properties associated with potential generation of asbestos dust. A provisional threshold limit should be adopted for air monitoring of 0.015f/ml which if exceeded would trigger additional dust suppression measures or a reduction in activity whilst giving due consideration weather conditions. "Dirty" working areas should be segregated from "clean" uncontaminated areas to prevent cross contamination. Measures will be required for plant and personnel moving between areas to ensure that contaminated material is not transferred to uncontaminated areas (e.g. boot washing, plant wheel / track washing).

To help mitigate risks to workers, they should wear appropriate PPE / RPE (including disposable suits and FFP3 face masks) and employ high standards of personal hygiene including washing hands before eating, work in well-ventilated areas, avoid confined spaces, avoid contact with soil and groundwater and not smoke in order to manage their potential risks.

Any Made Ground impacted with cement bonded asbestos sheeting fragments which cannot be picked out should be classified as Hazardous Waste under waste code 17 05 03*. Any picked fragments of asbestos sheeting should be classified as Hazardous Waste under waste code 17 06 05*. Any proposed waste disposal facilities should be suitably licensed to accept each type of waste material. All disposal tickets (and any EA waste consignment notes) should be retained.

As inferred above it may be appropriate to conduct a picking exercise to remove the asbestos fragments from the Made Ground associated with excavated material at TP03 to help reduce the volume of Hazardous Waste for of site disposal. For any asbestos picking the impacted Made Ground will be excavated carefully in small volumes, be placed in a controlled area and then picked through by suitably

qualified and experienced asbestos removal contractors to remove the ACMs under the supervision of an Environmental Consultant prior to the separate disposal of the of the Made Ground arisings and recovered fragments.

Any picked ACMs should be disposed of separately as Hazardous Waste under waste code 17 06 05* to a suitably licensed facility (disposal tickets / consignment notes will be retained). The waste Made Ground arisings will then be disposed of as Non-Hazardous Waste under waste code 17 05 04.

It would be prudent to load the impacted material directly into haulage lorries to avoid double handling as far as possible. However, if any of the impacted Made Ground arising's are stockpiled pending offsite disposal then it should be segregated from other materials, dampened down, placed onto sheeting and then covered by sheeting. Subject to findings when removing the existing hardstanding it may not be suitable for crushing and re-use on site (e.g. as pile mat material), for example if asbestos fragments are identified to be adhered to the underside of the hardstanding.

Haulage Lorries removing the asbestos impacted Made Ground waste material should be sheeted and wheels / chassis should be inspected / washed as appropriate prior to leaving the site to ensure that any potential contaminated materials are not tracked onto surrounding local roads. Dry sweeping is not prohibited.

A Discovery Strategy should be employed on site during the proposed remediation and follow-on redevelopment work to help manage the potential for encountering previously unidentified contamination / suspected contamination.

Following the remedial excavation of asbestos impacted material, soil validation samples should be recovered from the sides and base of the remedial excavation in order to certify successful removal of the asbestos impacted Made Ground. Soil validation samples should be analysed for asbestos presence / absence for this purpose. If any of the validation samples record the presence of asbestos then further remedial excavation will be required. The remedial target for asbestos impact is to completely remove asbestos impacted Made Ground. The Remedial Strategy suggested a minimum of 5 no. samples from the sides and base of the remedial excavation associated with TP03.

Remedial work should be documented within a Validation Report produced by an Environmental Consultant for Regulatory approval with respect to planning requirements.

Made Ground Impacted by Lead and PAH

Made Ground impacted by Lead and PAH is to be excavated up to between 0.2m and 1m below existing site levels for the proposed development. This is not to the base depth of contamination, and it is understood that some contaminated material may remain. Full time site supervision by an Environmental Consultant is required to oversee the remedial excavation, assist with segregation of waste arising's to help facilitate appropriate disposal of waste streams, collection of soil validation samples, and to document remedial works undertaken for the purpose of a subsequent Validation Report required for Regulatory approval.

To mitigate risks to workers, they should wear appropriate PPE and employ high standards of personal hygiene including washing hands before eating, work in well-ventilated areas, avoid confined spaces, avoid contact with soil and groundwater and not smoke in order to manage potential exposure risks.

The PAH impacted made Ground was classified as Non-Hazardous Waste for offsite disposal under waste code 17 05 04 for offsite disposal to landfill. The coal tar rich tarmac was classified as Hazardous Waste for offsite disposal under waste code 17 03 01*. Any proposed waste disposal facilities should be licensed to accept the appropriate type of waste material. All disposal tickets (and any EA waste consignment notes) should be retained.

Similarly, to the asbestos contamination, it would be preferable to excavate material directly into haulage lorries however if the excavated impacted Made Ground arising's are required to be stockpiled pending offsite disposal, then it should be appropriately segregated from other materials, placed onto sheeting and then covered by sheeting. All disposal tickets should be retained following the disposal off site to suitably licensed waste facilities.

Validation samples should be recovered from the sides and base of any excavations following the site wide reduction in level in order to certify successful removal of the impacted Made Ground or to identify any remaining residual concentrations. Soil validation samples should be collected upon an approximate 10m grid from across the impacted areas of the site for analysis of the contaminants of concern.

The remedial work should be documented within a Validation Report produced by an Environmental Consultant for Regulatory approval with respect to planning requirements.

Areas of proposed soft landscaping will be afforded with a "clean" cover system comprising a minimum thickness of 475mm certified "clean" imported topsoil placed over a high visibility geotextile marker layer. If trees are proposed, then a greater thickness of topsoil will be required for tree pits. Prior to the delivery of any imported topsoil the supplier's chemical batch data for the proposed imported topsoil should be supplied to an Environmental Consultant for approval.

Following placement, the "clean" cover system afforded to proposed areas of landscaping will be validated by an Environmental Consultant with respect to chemical suitability and material thickness. Validation samples of the imported topsoil should be analysed for a general range of contaminants in order to confirm suitability for use on site with respect to human health based on the proposed end use and including for asbestos, metals, TPH, speciated PAHs, phenois and pH.

All imported material delivery tickets and supplier chemical batch data should be retained for inclusion within the final Validation Report.

Ground Gas Risk Mitigation

The Remedial Statement outlined that ground gas protection measures in accordance with Characteristic Situation 2 of CIRIA C665 be installed on site within the new properties. This should include a hydrocarbon vapour resistant membrane as per the Ground Gas / Vapour Mitigation Design. Once fitted the approval of the Ground Gas Protection Measures will be subject to a third-party independent inspection.

Other Remedial Measures

It is recommended that chemically resistant barrier pipe be included within the design of the proposed development. The specification for any water supply pipe proposed should be provided to an Environmental Consultant for approval and the installation of barrier pipe should be documented (e.g. by ways of photos and a layout plan).

During all works on site associated with the construction of the proposed development workers will wear appropriate PPE and employ high standards of personal hygiene (including washing hands before eating), work in well-ventilated areas, avoid confined spaces, avoid contact with soil and groundwater and not to smoke.

No unauthorised releases shall be permitted from site during the proposed development works. Any discharges should be consented by the Environmental Agency.

2.8 Technical Addendum to Remedial Strategy (Ref: 4551 22 07 04 Tech Adden 01 Rev A BD SP) dated July 2022 by SEC;

A Technical Addendum was produced by SEC, to supplement the original Remedial Strategy (Ref: 4551 22 07 04 Tech Adden Rev A BD SP) in order to document a proposed change to the previously agreed Strategy.

Remedial Excavation -

The Technical Addendum outlined that remedial excavation of the Made Ground to the west of the site be conducted down to proposed formation levels outlined by the Client rather than complete removal of the Made Ground. Areas of soft landscaping were to be excavated to allow for a minimum thickness of 475mm of a certified "clean" cover system, while areas of hardstanding will be excavated to variable depths, dependant on formation levels. Residual Made Ground remaining in areas of shallow excavation associated will be subject to validation testing to document the residual contamination. Potential risks to future site occupants were considered mitigated by the proposed hardstanding and "clean" cover system, which will break human health exposure pathways.

As per the previous Remedial Strategy potential risks to groundworkers / construction workers would be mitigated by the employment of good hygiene standards and future risks to site occupants with regard to impacted Made Ground would be mitigated through the recording of the presence of these materials within the Site Health and Safety File. This should also detail that if the site layout changes in the future, then an Environmental Consultant should be engaged prior to any proposed changes to consider potential risks and ensure they are managed appropriately.

Protected Trees –

3 No. trees located on site adjacent to the western boundary are subject to Tree Protection Orders and as such excavation within the root protection zones would have to avoid compromising the trees, whilst removing as much impacted Made Ground as possible. As such the following was recommended:

- Conduct of additional site investigation locally to TP03 to better delineate the extent of Made Ground impacted with cement bonded asbestos sheeting fragments, to hopefully rationalise the extent of asbestos remedial excavation required. As previously prescribed in the original

Remedial Strategy risks to site investigation personnel should be mitigated by the use of PPE / RPE and dust suppression;

- Production of an Arboricultural Development Report by an Arboricultural Consultant in accordance with BS5837:2012 inclusive of a Tree Survey and Tree Survey Plan, Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan;
- Ecological inspection of the trees ahead of pollarding to mitigate potential risks to nesting birds and bats;
- Pollarding of the trees given their size and that the canopy overhangs the position of the proposed houses;
- Careful removal of hardstanding and any sub-base across the western area of the site by a small mechanical excavator with a ditching (toothless) bucket;
- Following removal of hardstanding and sub-base, excavation of soils will be conducted by hand to mitigate damage to tree roots. Where tree roots become too abundant (close to the tree trunks) for hand excavation then impacted Made Ground will remain and the cover system will be "feathered" up to the tree trunks subject to guidance by the Arboricultural Consultant; and
- Future management of the trees will be required.

Excavation to the eastern side of the Site without Environmental Consultant Watching Brief –

Due to the excavation of Made Ground impacted by asbestos fragments up to 0.60m below the original ground level, without an Environmental Consultant's Watching Brief it was recommended that the resulting stockpile of impacted arisings be disposed of as Hazardous Waste (under dual waste code 17 05 04 (soil) and 17 06 05* (cement asbestos fragments). Subject to landfill it may also be possible to dispose of the arisings as Hazardous Waste under 17 05 03*.

The excavated area should be subject to a trial pitting exercise and inspection by a suitably qualified Environmental Consultant to help confirm that the excavation conducted has removed all asbestos cement bonded fragment impacted Made Ground. Additionally, a representative number of soil validation samples should be analysed for asbestos from across the area of concern.

3.0 Remedial Works

3.1 Introduction

Further to the previous reports briefly summarised above, SEC was instructed by the Client to produce a Validation Report to document the remedial measures that were implemented during the development of the site.

The following describes the remedial measures implemented during the redevelopment of the site from a former St Johns Ambulance HQ and disused water tower to a two-storey block of flats and 2 no. one bedroom bungalows inclusive of associated car parking and soft landscaping.

3.2 Site Description Prior To Remediation

Prior to the conduct of any remedial work, the site comprised an approximately L-shaped plot of land laid to soft landscaping and bituminous surfacing. Areas previously occupied by buildings have been demolished and are laid to concrete or Made Ground. The site opens onto Albert Murray Close to the north and Armoury Drive to the east of the site (see Appendix B – Site Photos).

3.3 Remedial Works Proposed

In order to help mitigate potential risks associated with the impacted Made Ground that had been identified on site, remedial measures were proposed as described below.

A Discovery Strategy was to be implemented on site to help provide a procedure to follow, in the event that unforeseen or previously unidentified potentially contaminated arisings were to be encountered during the redevelopment groundworks.

The conduct of a Watching Brief by an Environmental Consultant during the preparatory groundwork and excavation of asbestos and PAH impacted soils and coal tar rich tarmac, in order to document and validate the remedial excavation work and to help segregate waste arisings for appropriate disposal at licensed facilities.

Following removal of the impacted Made Ground and coal tar rich tarmac, validation testing of the base of the remedial excavation was proposed to help confirm the absence of asbestos.

It was noted that should groundwater be encountered throughout the development of the site, or should uncontrolled surface water run-off occur on site, then effective management methods should be implemented on site.

All waste arisings disposed of from site were to be compliant with current EA WM3 guidance. To help mitigate risks with respect to the residual contamination that will remain on site beneath hardstanding, it was proposed to record its presence within the Site's Health and Safety File.

Prior to SEC's attendance on site 12 no. loads were inadvertently removed by the Client, as part of a vegetation clearing and levelling exercise from the eastern extent of the site and a contamination hotspot associated with asbestos fragments, as Inert soils. The remaining stockpiled material from this area, as per the previous Remediation Strategy and Technical Addendum, was then removed from the site to a suitably licensed waste facility.

To mitigate residual risks to future site occupants, ground gas protective measures in line with Characteristic Situation 2 were to be implemented on site in all new properties.

To mitigate residual risks to future site occupants, it was also proposed to consult with the water supplier to confirm their requirements with respect to the type of water supply pipe required on site or alternatively to include chemically resistant barrier pipe within the design of the proposed development.

All supporting information, including disposal tickets for material removed from site, was required to be collated upon completion of the redevelopment for inclusion with a Validation Report to confirm that the risks to workers, site neighbours and future site users had been appropriately managed to reduce exposure pathways as far as reasonably practicable.

3.4 Remedial Works Undertaken

Discovery Strategy

Prior to the conduct of intrusive work on site a Discovery Strategy was implemented which provided protocol for groundworkers to follow in the event that previously unidentified potential contamination was identified during the works (see Appendix C - Discovery Strategy).

Groundwater and the Control of Surface Water Run-Off

No groundwater or uncontrolled surface water run-off was identified throughout the development process, and the main contractor implemented standard groundwater/surface water management procedures should this have occurred. However, a previously unidentified underground chamber was identified on site, which contained liquid. This was managed appropriately and disposed of accordingly, and more details on this can be found below within the 'Variations' section.

Watching Brief During Remedial Excavation and Groundwork

In accordance with the remedial strategy a watching brief was maintained by an SEC Engineer during the remedial excavation and general preparatory groundwork associated with the construction of the block of flats and bungalows. Excavation commenced on site on 12th January 2023. Initially, the coal tar rich tarmac across the site was carefully broken out under the watching brief of a Geo-Environmental Consultant. The broken and scraped up coal tar rich tarmac was stockpiled adjacent to the Albert Murray Close entrance to the site upon existing tarmac to enable direct loading into disposal lorries for disposal to suitably licensed waste facilities.

During removal of the tarmac, the asbestos hotspot associated with this scraping was then excavated methodically west to east across this area down to the underlying natural soils or unimpacted Made Ground (~0.55m below the original ground level) (see Appendix B - Site Photos). The arisings of this scraping were segregated and combined with the asbestos impacted Made Ground stockpile left over from the previous inadvertent levelling of the southern extent of the site and was loaded directly into lorries for disposal to a suitably licensed waste facility as hazardous soils under waste code 17 05 03*. The eastern half of the site was then reduced dug from west to east down to underlying natural soils.

The western half of the site was excavated approximately 0.55m below the existing ground level down to underlying natural soils excluding areas to the north of the site, where contaminated soils impacted with elevated Lead extended beyond the proposed remedial excavation depths (see Appendix B - Site Photos). In these areas, the impacted Made Ground was removed to the proposed development depths and validation samples were collected to verify the presence or absence of any remaining elevations of Lead.

A full-time watching brief was conducted during the removal of the Made Ground down to proposed development depths and an asbestos picking exercise was conducted during the remedial excavation, to the east of the site and the hotspot associated with TP03, to pre-treat the asbestos impacted Made Ground prior to off-site disposal, by removing the cement bonded asbestos sheeting fragments for appropriate separate disposal. All operatives were provided with PPE and appropriate RPE including disposable suits and FFP3 face masks during the asbestos remediation (Appendix D – Extract from the Health and Safety File), and Appendix B – Site Photos). Dust suppression measures were also employed to help mitigate the potential for asbestos containing dust generation, using an airless sprayer and surfactant. During the excavation of asbestos contaminated soils, reassurance air monitoring was conducted by a third-party laboratory to confirm that the risks were being suitably managed with regards to asbestos fibres during the excavation process (see Appendix E – Air Monitoring Results).

Following the remedial excavation of the hotspot associated with TP03, soil validation samples were collected from the base and sides of the excavation to confirm the absence of asbestos (ASB VAL Side E01, W01, S01, N01 and Base 01 – 03). The 7 No. validation samples collected identified an absence of asbestos following testing for asbestos presence (see Appendix A Figure 3 - Validation Sample Location Plan and Appendix F – Laboratory Analysis Results).

Following remedial excavation of the rear gardens in Plots 1 – 4 terram was laid around the perimeter of the site and across areas of proposed rear gardens / landscaping areas (see Appendix B - Site Photos).

During remedial excavation arisings were segregated and stockpiled for disposal on site to allow for the removal of soil from site via haulage lorry to help control the impacted material in order to prevent migration of contaminants and dust (see Appendix B - Site Photos).

The centre of the site contained the site office and working cabins for the site works and as such were not excavated beneath at the same time as the rest of the site. These were moved once development of the ground floor slabs of all Plots had been completed, enabling excavation to suitable development levels. Following the relocation of the cabins and the excavation of the area of the cabins, validation samples were collected from the underlying material (TP04 – base and sides) and analysed for the contaminants of concern, Lead and PAHs, given that previously TP02 had identified elevated

concentrations of these contaminants. Soil analysis for the contaminants of concern identified no elevated concentrations above the threshold values.

Remediation of the eastern side of the site (surrounding TP01) which had been identified as impacted by asbestos was conducted. This area of site was noted to have been previously cleared/levelled before SEC attended site and the arisings had been stockpiled and were removed from site to a suitably licensed facility. Validation samples were collected (Val101, Val102 and Val104) and identified and absence of asbestos within this area, confirming acceptable removal of the contaminant.

Air Monitoring

During both the remedial excavation work and the Asbestos Containing Material picking exercise associated with the remedial excavation of the asbestos impacted Made Ground at TP03, background Reassurance Asbestos Air Monitoring was conducted by an independent laboratory (HFS Environmental) to help confirm suitable management of dust containing asbestos fibres during the remedial excavation work. The results identified no unacceptably elevated concentrations of asbestos fibres during the remedial excavation (for full results please see Appendix E – Air Monitoring Results).

Waste Disposal

All individual waste disposal tickets are presented within Appendix G - Waste Disposal Tickets, and a summary is provided below:

During the groundworks associated with the excavation of soils from the site, a total of 65 No. 20t lorry loads of non-hazardous waste arisings were disposed of from site by Mark Luck Ltd to FCC Eurohub, Box Lane, Renwick Road, Barking, IG11 OSQ (DW 2230123).

In addition, Soil and Stone removed 6 No. 20t lorry loads of asbestos fragment impacted soils as hazardous waste under classification code 17 06 05* to Edwin Richards Soil Treatment Facility, Portway Road, Powley Regis, B65 9DN (DW2232774) and 4 No. 20t lorry loads of coal tar rich tarmac under waste classification code 17 03 01 to Osmonds Environmental Ltd, Greenacres Farm, Old Hay, Brenchley, Tonbridge, Kent, TN12 7DG.

Upon excavation of Chamber 02, 1 No. 15t grab lorry load of asbestos fragment impacted soils was removed by Mark Luck Ltd as Hazardous waste under waste classification code 17 05 03* to Wolverhampton Waste Treatment, Lower Horseley Fields, WV1 3DT. 4 No. 20t lorry load of hardcore were removed as inmixed hardcore under waste classification 17 01 07 by Soil and Stone to ABC Crayford.

1 No. skip loaded with a concrete slab with an adhered cement bonded asbestos sheeting and 3 No. 10kg bag of asbestos fragments and used PPE / RPE was removed by Asbestos Waste Solutions Limited and disposed of at Pinden Ltd, Pinden Quarry, Green Street, Green Road, Longfield, Dartford, Kent, DA2 8EB as hazardous waste under classification code 17 06 05*.

All waste disposal codes utilised were consistent with the findings of the previously outlined WM3 Assessment for the materials encountered on site.

Certified "Clean" Cover System for Gardens and Communal area of soft landscaping

Following the remedial excavation and preparatory groundworks, SEC certified the provision of the "clean" cover system provided to the landscaped areas within which a Hi-Visibility geotextile membrane was incorporated (see Appendix A – Figure 4 Landscape Plan, Appendix H - Hi-Visibility Geotextile Membrane Specification and Appendix J – Imported Material Delivery Tickets and Chemical Batch Data). It is noted that during the construction process, the landscaping plan had been adapted with some areas of shingle becoming concrete areas of shingle as opposed to some areas being reinstated with Topsoil.

Initially, SEC attended site and collected a sample of imported Topsoil material (Topsoil Import 01 A-C) from a stockpile to provide some initial testing to indicate that the material was suitable for use. The findings from the testing of this sample came back as favourable and indicated that the Client could proceed. It is also understood that Type 1 had been imported and laid to provide safe footings for the scaffolding. SEC collected and tested a sample of this material also (Type 01 Import 01 A-C), and the results came back favourably.

SEC attended site on several dates to periodically validate each of the garden/soft landscaping areas on site. The rear gardens of Plots 1-4 were installed with a hi-visibility geotextile membrane with imported Topsoil noted over the top to depths ranging between 0.15m bgl and 0.30m bgl. This variation in imported material depths within these garden areas is due to the presence of trees with associated Root Protection Zones (RPZ). The RPZs had to be protected from damage, and therefore it was only possible to get the shallower thickness of topsoil within these areas. SEC is of the understanding that the Client (Council) dealt with the constraints associated with arboriculture, such as identifying the RPZs and observing for root impact during the placement of the imported Topsoil, (see Appendix B – Site Photos and Appendix I - Arboriculture Related Documents).

The remaining soft landscaping areas were also required to be reinstated with clean cover material, and the depth specified was 475mm. This depth was achieved, and validated by the conduct of hand dug pits through the Topsoil material to prove that a hi-visibility marker/alert geotextile was installed across each soft landscaped area (see Appendix B – Site Photos). It is noted that some of the smaller areas of soft landscaping had changed in proposed design, and were to be afforded with concreted as opposed to having Topsoil reinstated. These areas were reinstated by concreting over the remaining soil on site to provide a significant hard capped seal to break the source-pathway-receptor linkage, (see Appendix B – Site Photos).

The chemical batch data for the imported Topsoil was provided prior to the import of the material, which identified favourable results given consideration of the proposed residential with homegrown produce end use (see Appendix J - Imported Material Delivery Tickets and Chemical Batch Data). 9no. samples of the imported Topsoil were taken and delivered to site for laboratory validation analysis purposes to check that the imported material is fit for purpose as a "clean" cover system, (see Appendix B - Site Photos (further photos awaited), Appendix A Figure 3 - Validation Sample Location Plan and Appendix F - Laboratory Analysis Results). Similarly, 1no. sample of shingle was sent to the laboratory for testing to confirm that this material was also acceptable to provide a "clean" cover system.

The topsoil and shingle validation samples were analysed for a suite of determinands including asbestos presence / absence, metals, TPH, speciated PAHs, phenols and pH to confirm the chemical suitability of the material in relation to human health based on the proposed residential end use with

homegrown produce (see Appendix J - Imported Material Delivery Tickets and Chemical Batch Data). All of the samples recorded results that were considered favourable (see Appendix F - Laboratory Analysis Results).

Ground Gas Protection Measures

Membrane Testing Solutions Ltd provided the Ground Gas Protection measures design and validation of protective measures to be included within the design of residential building. Accordingly, a Design Verification Plan was produced by Membrane Testing Solutions Ltd which specified the design, installation and validation processes proposed (see Appendix K for Ground Gas Membrane Specification, Verification Plan and Validation Certificate).

The new buildings were provided with ground gas protective measures in accordance with Characteristic Situation 2 of CIRIA C665 inclusive of underfloor ventilation. It is understood that Longley Group installed the protective measures in accordance with the Design Verification Plan and that the independent specialists, Membrane Testing Solutions Ltd validated the installation of the protective measures (see Appendix K - Ground Gas Membrane Specification, Verification Plan and Validation Certificate).

It was noted during the validation site visit in February 2024 for the installation of protective measures, that clay airbricks placed within the buildings did not provide sufficient ventilation and were required to be replaced with plastic air bricks. It is understood from the Client that all clay airbricks throughout plots 1-6 have now been replaced with suitable plastic airbricks, (see Appendix L – Confirmation of Plastic Air Bricks and Appendix B – Site Photos).

Chemically Resistant Water Supply Pipe

It is understood from the Client that the water supply pipe installed to the new development was chemically resistant barrier pipe and comprised 32mm Type A Coil Puriton Barrier Pipe, (see Appendix M – Chemically Resistant Barrier Pipe Specification and Appendix B – Site Photos).

Future Risk Management of Residual PAH and Lead Impacted Soils

The presence of residual ground contamination remaining on site in areas that were not subject to preparatory groundwork to sufficient depth to remove the contamination, has been recorded within the Site Health and Safety file (see Appendix D – Extract from the Health and Safety File).

Further to this, in order to help manage the risks to human health from prevent future exposure to PAH or Lead contaminated soils, no intrusive groundwork should be conducted on site without prior risk assessment by a Geo-Environmental Consultant.

Variations

As previously mentioned, a Technical Addendum was implemented prior to any remedial excavation due to a change in the proposed working method and the inadvertent excavation and removal of asbestos impacted soils by the Client from the eastern area. The key variations are detailed as follows:

PAH and Lead impacted Made Ground

The variations outlined within the Technical Addendum included for the excavation of PAH and Lead impacted soils down to formation level rather than their complete excavation and that validation testing would then be required at the base of excavations to identify any remaining contamination to be documented within the Health and Safety File.

Tree Protection Orders

Due to Tree Protection Orders on site, Made Ground impacted with asbestos could not be completely removed from site as prescribed originally within the Remedial Method Statement. Any excavation was therefore to be conducted by hand and upon the identification of abundant tree roots the prescribed "clean cover system" will be truncated to be feathered up as one gets close to the tree trunks.

Excavation of Asbestos Impacted Soils

Inadvertent excavation of asbestos cement fragment impacted soils up to 0.60m bgl to the east of the site without an Environmental Consultants Watching Brief. Trial pitting exercises were conducted across the eastern extent of the site and inspection by a suitably qualified Environmental Consultant to ensure that all asbestos cement bonded fragments had been suitably excavated from this area. 2 No. handpits were conducted within the area that had been reduced / excavated to enable the collection of validation samples and visually confirm an absence of cement bonded asbestos fragments. A representative number of soil validation samples were conducted in this area which confirmed no asbestos within this analysis (see Appendix F - Laboratory Analysis Results).

Previously Unidentified Chambers

During the remedial excavation of the site 3 No. previously unidentified Chambers were identified across the site. All chambers were observed and documented by both a suitably qualified archaeologist and Geo-Environmental Consultant.

The largest chamber (Chamber 01) was identified beneath the existing Water Tower ground floor slab. The Chamber was approximately four metres in width and eleven metres deep and was largely filled with soil and miscellaneous waste (metal and domestic items). Upon identification of Chamber 01 the infill material was partially excavated to enable the collection of samples to facilitate disposal to a suitably licensed waste facility. The analysis conducted identified that the Chamber 01 infill material was suitable for disposal as Non-Hazardous soil (see Appendix F - Laboratory Test Results). Due to the depth of the chamber and therefore the volume of infill material it was agreed that the chamber be excavated to a sufficient level to enable the placement of a concrete slab which would provide a sufficient pathway break to any future residents and enable the laying of steels to bridge the chamber, due to the proposed development footings extending across Chamber 01 (see Appendix B - Site Photos).

Chamber 02 was identified within the northeast corner of the site approximately 0.80m in width, 1.5m in depth and 1.2m in length and was filled with miscellaneous waste and soil. Chamber 02 was capped by a concrete slab into which a sheet of corrugated cement bonded asbestos had been set as re-enforcing. Upon excavation fragments of cement bonded asbestos were identified, ranging in size from ~1cm to 1m in length. Due to the identification of asbestos sheeting fragments, excavation was paused until the relevant asbestos awareness trained personnel were equipped with suitable PPE and RPE (Category III Type V overalls, FFP3 face masks and latex gloves) and dust suppression was employed (see Appendix B - Site Photos). Following this, Chamber 02 was excavated, and all arisings were segregated and sheeted awaiting testing and disposal to a suitably licensed waste facility. Analysis of the infill material identified the soils to be hazardous for disposal under waste code 17 06 05* due to the presence of chrysotile asbestos fragments. Chamber 02 arisings were dampened and sheeted whilst awaiting disposal. Upon removal of all infill material Chamber 02 was broken to facilitate the levelling of the site. Chamber 01 and Chamber 02 were considered to likely have been associated with one another due to Chamber 02 containing approximately 4" metal pipes that were identified to lead off in the direction of Chamber 01.

Chamber 03 was identified adjacent to the northeast corner of the previously existing Former St Johns Ambulance HQ at approximately 1m³ in size and was identified to be filled with rubble and water. The chamber was maintained and not broken to enable the testing of the contained water. Analysis identified the water to be contaminated and require disposal to a suitably licensed waste facility. As a result, the water and rubble were removed from the Chamber by Tardis through a large diameter suction tube and removed to a suitable facility at McGovern House, Amberley Way, Hounslow, Middlesex, TW4 6BH (see Appendix N - Tardis Disposal Ticket) for appropriate disposal. Upon the removal of the water and rubble a small excavation was made beneath the chamber to facilitate the collection of a soil sample from beneath for testing. Analysis of the sample identified no elevations of contamination that may pose a risk to future residents (see Appendix F for Laboratory Test Results).

4.0 Conclusions and Recommendations

Remedial measures have been implemented on site during the construction of the residential buildings and associated gardens in accordance with the Remedial Strategy and subsequent Technical Addendum. Measures included a watching brief during groundworks and remedial excavation by an Environmental Consultant, provision of a certified "clean" imported cover system to areas of soft landscaping, appropriate waste disposal, management of risks to human health associated with asbestos soil contamination and inclusion of ground gas protection measures within the properties. Additionally, residual contaminated soils which remain capped by hardstanding have been recorded in the sites Health and Safety File so as to manage future risks.

It is therefore considered that potential risks associated with contaminated land are now low and the site is considered suitable for the proposed residential end use.

Please note however, that should it be proposed to change the site use or layout, or should additional ground information be obtained, then at the earliest opportunity the potential risks should be re-appraised by a Geo-Environmental Consultant.

5.0 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 and is subject to approval by the regulators.
2. The Client is advised that the conditions observed on site by SEC at the time of the investigation are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance, investigation or fieldwork and they may subsequently have become observable.
3. Comments made relating to land gas or groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. The normal rate of conduct of an exploratory hole does not usually permit the recording of an equilibrium groundwater level for any one strike. Land gas and / or groundwater conditions may vary as a result of seasonal or other effects.
4. Ground contamination often exists as small discrete areas of contamination and there can be no certainty that any or all such areas have been located, sampled and/or identified. This is particularly significant for an investigation by boreholes as a relatively small sample of soil is extracted, which may not be entirely representative of the surrounding ground conditions.
5. The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between or beyond borehole positions up to the site boundary, these are only for guidance only and no liability can be accepted for their accuracy.
6. This assessment may be subject to amendment in light of additional information becoming available.
7. The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from 1) previous site investigations and 2) 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.
8. 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.
9. 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.
10. SEC believes that providing information about limitations is essential to help the Client identify and thereby manage risks.

11. 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.
12. SEC does not provide legal advice and the advice of the Client's legal advisors may also be required.
13. The use of data generated by this site investigation for the design of foundations was outside the scope of this report.
14. SEC notes that this assessment is subject to regulatory review and approval.
15. This report represents a stage in an iterative process of investigation and assessment and as such it is possible that further work may be recommended.
16. An ecological, topographical or asbestos survey was outside of the scope of this report.

Appendix A

Figures



SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

JOB NO: 4768

FIGURE TITLE: Site Location Plan

REV: 01

FIGURE NO: 1

 SEVENOAKS
ENVIRONMENTAL
CONSULTANCY



SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

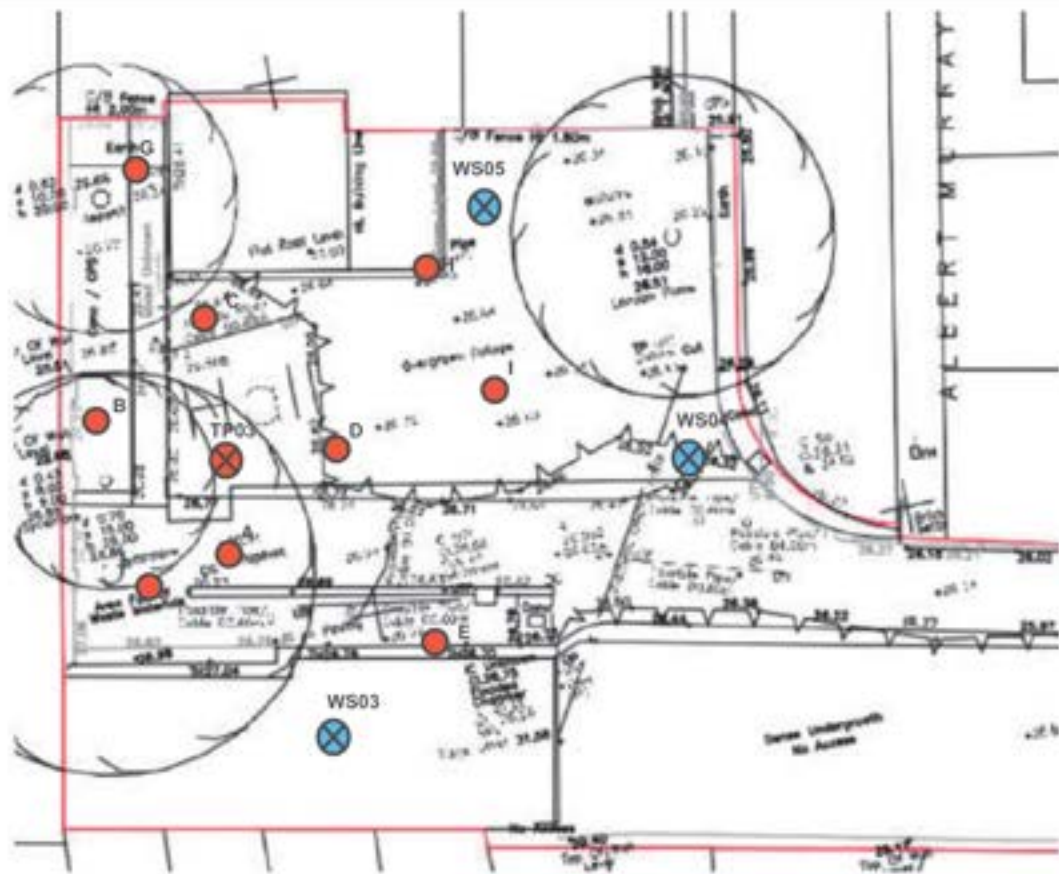
JOB NO: 4768

FIGURE TITLE: Proposed Site Layout Plan

REV: 01

FIGURE NO:2

 SEVENOAKS
ENVIRONMENTAL
CONSULTANCY



SITE: Armory Drive, Gravesend, DA12 1NB

SCALE: NTS

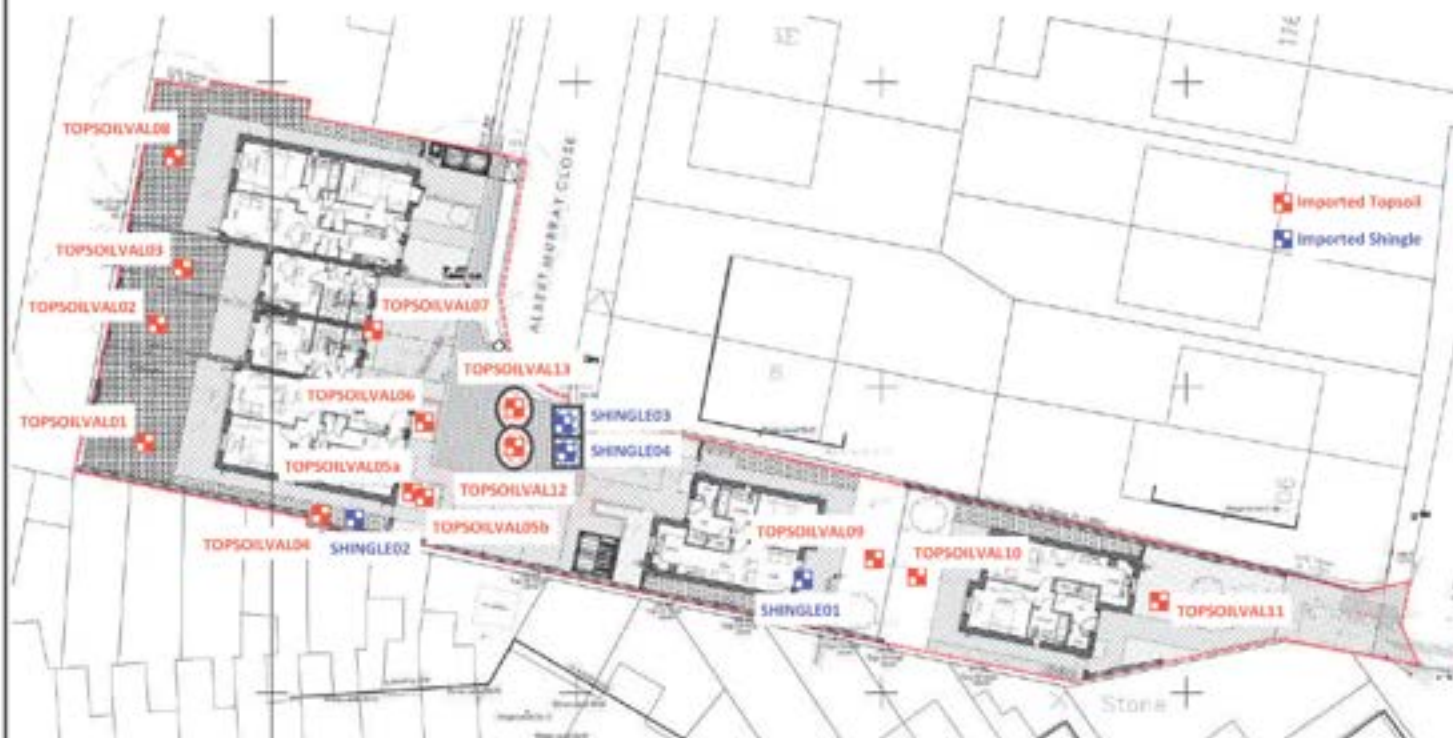
JOB NO: 4768

SEVENOAKS
ENVIRONMENTAL
CONSULTANCY

FIGURE TITLE: Validation Sample Location Plan

REV: 01

FIGURE NO: 3a



SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

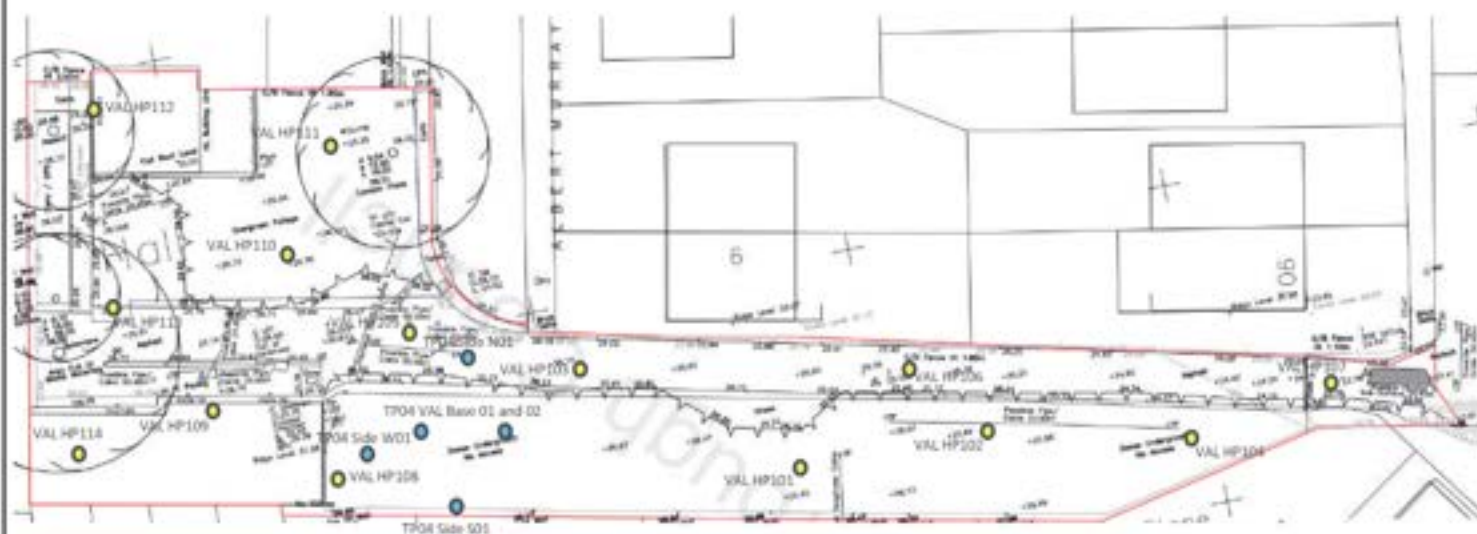
JOB NO: 4768

FIGURE TITLE: Validation Sample Location Plan

REV: 01

FIGURE NO: 3b

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

SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

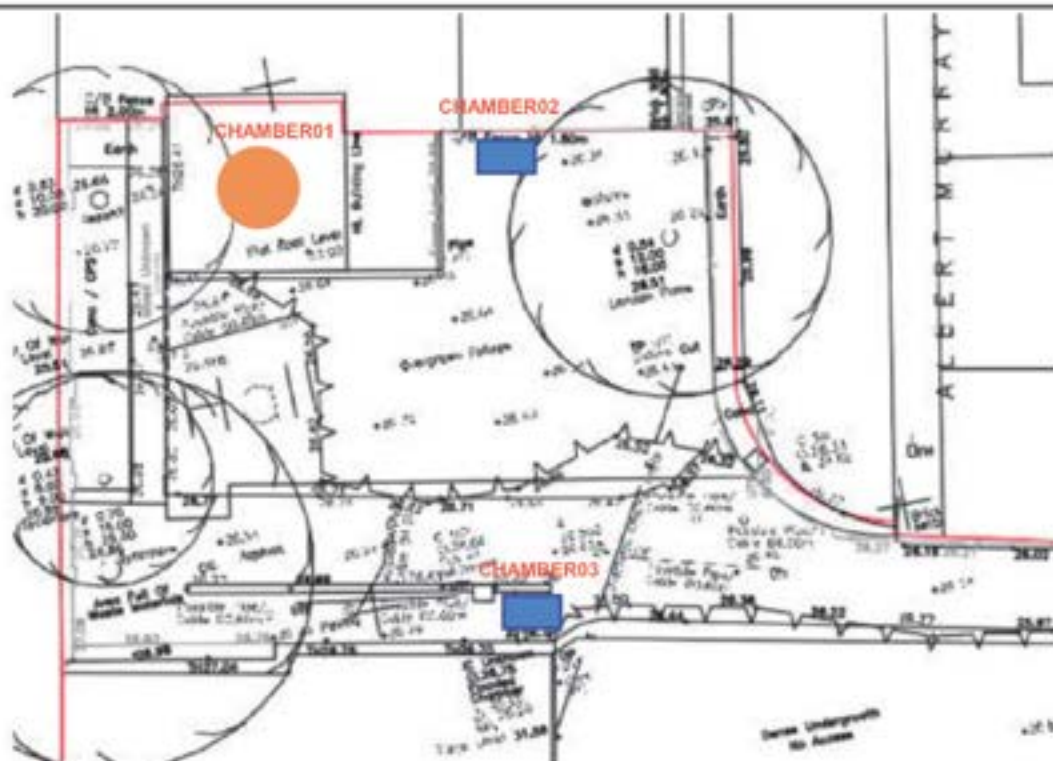
JOB NO: 4768

FIGURE TITLE: Validation Sample Location Plan

REV: 01

FIGURE NO: 3c

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

SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

JOB NO: 4768

FIGURE TITLE: Validation Sample Location Plan

REV: 01

FIGURE NO: 3d

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SITE: Armoury Drive, Gravesend, DA12 1NB

SCALE: NTS

JOB NO: 4768

FIGURE TITLE: Landscape Plan

REV: 01

FIGURE NO: 4

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Appendix B

Site Photos



Photos 1 + 2 - Showing area of remedial excavation for asbestos testing, identifying PPE, mechanical excavator and lorry for disposal



Photos 3 + 4 - Example soil validation sampling for testing



Photo 5 - Chamber 5 identified to the northeast



Photos 6 + 7 - Chamber 2 (left) and Chamber 3 (right) to the northeast and south of the site respectively



Photo 8 - Lorry and mechanical excavator used to remove coal tar rich tarmac



Photos 9 + 10 - Example soil validation samples from beneath the tarmac hardstanding



Photo 11 - Example photo showing levelled site



Photos 12 + 13 - Examples of trenches dug for foundations



Photos 14, 15 + 16 - Examples identifying the depth of ground removed to afford clean cover system and hi-visibility membrane





Photos 17, 18 + 19 - Example of hi-visibility membrane placed within soft landscaped areas



Photos 20 + 21 - Example imported topsoil sample collected for validation testing



Photos 22 + 23 - Examples of reinstatement with concrete hardstanding



Photo 24 - Example reinstatement of soft landscaping



Photos 25 + 26 - Example of barrier pipe used



Photo 27 - Example of hi-visibility geotextile membrane used

Appendix C

Discovery Strategy

DISCOVERY STRATEGY CONTAMINATED MATERIALS

SITE: Former St John's Ambulance Station, Armoury Drive, Gravesend

INTRODUCTION

We understand that the site previously comprised part of Gravesend Barracks and was used by St Johns Ambulance as a garage to park their vehicles. In addition a water tower occupied the site. The proposed redevelopment of the site involves the clearance of existing structures and hardstanding to make way for the construction of a 2 No. storey block of flats and 2 No. detached bungalows with communal and private gardens. The site will be undergoing some ground contamination remedial work associated with Made Ground containing cement bonded asbestos sheeting fragments and elevated concentrations of PAHs and lead as discussed within the Remedial Strategy document. A Discovery Strategy is to be implemented on site to provide a protocol to follow in the event that previously unidentified potential ground contamination is encountered during works.

Its purpose is to define the process to be undertaken on site in the event that previously unidentified ground or water contamination or suspicious objects (e.g. cement bonded asbestos sheeting fragments) are discovered during the redevelopment of the site. Should suspected evidence of contamination be identified then work should cease until additional separate assessment has been conducted by an Environmental Consultant. It is intended to be understood and followed by all on-site workers and for all new site workers to be made aware of the procedure.

HOW TO IDENTIFY POTENTIALLY CONTAMINATED MATERIAL

- Looks / colours – e.g. black, purple, pink, grey oily or has an iridescent sheen
- Odours / smells – e.g. has an oil, fuel or solvent type of odour
- Man made fragments – e.g. paint or oil tins, cans or drums, car parts, bottles, glass, metal, rubber or rubbish fragments
- Ground contains foreign fragments of cement bonded (potential asbestos) sheeting, coal/coke, clinker, ash
- Subsurface structures / vessels, concrete or metal e.g. oil or asbestos filled pits or tanks, walls, metal pipes and sandbags

(N.B. These are examples only – This list is not exhaustive. If in any doubt then ask)

PROCEDURE

If during the redevelopment work, any visibly contaminated or odourous material is found to be present at the site, it must be investigated further, the Local Planning Authority must be informed immediately of the nature and degree of contamination present and a method statement detailing how the unsuspected contamination shall be dealt with must be prepared and submitted to the Local Planning Authority for approval in writing before being implemented.

On the discovery of any suspicious material or buried structures during the redevelopment of the site, the following procedure should be followed:

- Site Personnel to immediately inform Client / Site Manager. Do not investigate it yourself.
- Client / Site Manager to inspect and confirm the observations of potentially contaminated material and will inform Sevenoaks Environmental Consultancy Ltd. The area will be cordoned off and work will cease in the vicinity.
- Sevenoaks Environmental Consultancy Limited will attend site to inspect and sample the material in question for laboratory testing to evaluate if the material in question has been reported on previously and will attempt to quantify the extent and volume of any potential contamination if not.
- The Environmental Health Officer at the Council will then be notified if the material has not been reported on previously that potentially contaminated material has been discovered and will be forwarded the relevant laboratory data and a remedial strategy for their approval in the event that the material is to be classified as contaminated.

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Regulator:

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Civic Centre,

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DA12 1AU

Tel: 01474 337000

Client

Longley Group

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Kent,

BR3 1HG

Contact: Samuel Parry / Chris Ward

Tel: 0203 846 8793

Email: Samuel.parry@longleygroup.co.uk / christopher.ward@longleygroup.co.uk

1. *Journal of the American Medical Association*, 277, 1996, 1033-1037.

Appendix C

Remedial Target Values

Ref	Parameter	Unit	Target Value
1	Asbestos	mg/kg	100
2	Lead	mg/kg	100
3	Cadmium	mg/kg	10
4	Copper	mg/kg	100
5	Chromium	mg/kg	100
6	Iron	mg/kg	1000
7	Manganese	mg/kg	100
8	Nickel	mg/kg	100
9	Silver	mg/kg	10
10	Vanadium	mg/kg	100
11	Zinc	mg/kg	1000
12	Barium	mg/kg	1000
13	Boron	mg/kg	100
14	Calcium	mg/kg	1000
15	Chlorine	mg/kg	1000
16	Fluorine	mg/kg	1000
17	Hydrogen	mg/kg	1000
18	Hydroxide	mg/kg	1000
19	Magnesium	mg/kg	1000
20	Mercury	mg/kg	10
21	Molybdenum	mg/kg	100
22	Phosphorus	mg/kg	1000
23	Selenium	mg/kg	100
24	Sulphur	mg/kg	1000
25	Titanium	mg/kg	1000
26	Vanadium	mg/kg	100
27	Zinc	mg/kg	1000
28	Aluminium	mg/kg	1000
29	Antimony	mg/kg	100
30	Bismuth	mg/kg	100
31	Cobalt	mg/kg	100
32	Copper	mg/kg	100
33	Chromium	mg/kg	100
34	Iron	mg/kg	1000
35	Manganese	mg/kg	100
36	Nickel	mg/kg	100
37	Silver	mg/kg	10
38	Vanadium	mg/kg	100
39	Zinc	mg/kg	1000
40	Barium	mg/kg	1000
41	Boron	mg/kg	100
42	Calcium	mg/kg	1000
43	Chlorine	mg/kg	1000
44	Fluorine	mg/kg	1000
45	Hydrogen	mg/kg	1000
46	Hydroxide	mg/kg	1000
47	Magnesium	mg/kg	1000
48	Mercury	mg/kg	10
49	Molybdenum	mg/kg	100
50	Phosphorus	mg/kg	1000
51	Selenium	mg/kg	100
52	Sulphur	mg/kg	1000
53	Titanium	mg/kg	1000
54	Vanadium	mg/kg	100
55	Zinc	mg/kg	1000
56	Aluminium	mg/kg	1000
57	Antimony	mg/kg	100
58	Bismuth	mg/kg	100
59	Cobalt	mg/kg	100
60	Copper	mg/kg	100
61	Chromium	mg/kg	100
62	Iron	mg/kg	1000
63	Manganese	mg/kg	100
64	Nickel	mg/kg	100
65	Silver	mg/kg	10
66	Vanadium	mg/kg	100
67	Zinc	mg/kg	1000
68	Barium	mg/kg	1000
69	Boron	mg/kg	100
70	Calcium	mg/kg	1000
71	Chlorine	mg/kg	1000
72	Fluorine	mg/kg	1000
73	Hydrogen	mg/kg	1000
74	Hydroxide	mg/kg	1000
75	Magnesium	mg/kg	1000
76	Mercury	mg/kg	10
77	Molybdenum	mg/kg	100
78	Phosphorus	mg/kg	1000
79	Selenium	mg/kg	100
80	Sulphur	mg/kg	1000
81	Titanium	mg/kg	1000
82	Vanadium	mg/kg	100
83	Zinc	mg/kg	1000
84	Aluminium	mg/kg	1000
85	Antimony	mg/kg	100
86	Bismuth	mg/kg	100
87	Cobalt	mg/kg	100
88	Copper	mg/kg	100
89	Chromium	mg/kg	100
90	Iron	mg/kg	1000
91	Manganese	mg/kg	100
92	Nickel	mg/kg	100
93	Silver	mg/kg	10
94	Vanadium	mg/kg	100
95	Zinc	mg/kg	1000
96	Barium	mg/kg	1000
97	Boron	mg/kg	100
98	Calcium	mg/kg	1000
99	Chlorine	mg/kg	1000
100	Fluorine	mg/kg	1000

Appendix D

Extract from the Health and
Safety File

2.13.4 Remaining Environmental Hazards

The following is a list of any materials and processes that could create an adverse environmental impact as a result of their use and maintenance:



Item	Risk/ Potential impact or environmental issue	Area(s) Affected	Outline of Required Physical and Management Controls incl. Monitoring
1	Waste removal and disposals	New Build and Equipment	Determine if the materials can be recycled or reused. Assess the potential environmental impact of disposal methods. Ensure compliance with local waste management regulations. Consider the energy required for disposal methods and choose the most energy-efficient option. Minimise the carbon footprint associated with disposal by choosing environmentally friendly methods. Take measures to prevent pollution during disposal activities. Explore alternatives to landfill disposal to reduce environmental impact.
2	Chemicals used during the installation process can contaminate the soil, water, or air if not properly handled and disposed of.	New Build and Materials	Ensure that all chemicals are used in accordance with manufacturer's instructions and safety protocols, and that proper procedures are in place for handling and disposing of hazardous materials.
3	The building and equipment end-of-life disposal can pose a risk to the environment if not properly managed.	New Build and Equipment	Ensure that the building and equipment end-of-life disposal is planned and managed in accordance with environmental regulations, and that proper measures are in place to minimise environmental impact, such as recycling or responsible disposal facilities.
4	Contaminated Land Risk Management	New Build and Surroundings	Original Made Ground material remains across the site underlying the new buildings, areas of hardstanding and the 450mm thick "clean" topsoil cover system (which is demarcated by a hi-visibility geotextile marker / alert layer) that has been provided to all of the landscaped and garden areas. If in the future any intrusive work is required beneath areas of existing hardstanding, buildings or the "clean" topsoil cover system then a Geo-Environmental Engineer should be consulted prior to the work to help manage potential residual risks.



Appendix E

Air Monitoring Results



HFS

environmental

ASBESTOS MANAGEMENT & TESTING

1 North Street,
Bromley,
Kent BR1 9BB

Tel: 020 8460 7760
Email: lab@hfsenvironmental.co.uk
Web: www.hfsenvironmental.co.uk



Job No	17613	Client Job No		Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT						

Issue Number	Date	Publisher	Reason
1	10/08/2023	HFS Environmental	

Job Details

Certificate Type	Airborne Fibre Concentration	Date	27/01/2023
Client Details	Sevenoaks Environmental Consultancy Ltd	Job No	17613
Site Address	Albert Murray Close, Gravesend, DA12 1LT	Report No	A-17613-19-001 - Issue 1
Contractors Details	Sevenoaks Environmental Consultancy Ltd	Client Job No	
Location of work area	See plan	Start time	11:35
Supervisors Name	A. Stocks	Asbestos Type	Unknown
Description of works	Excavation works.		

Summary

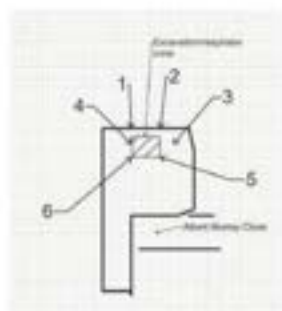
Air testing was carried out and the samples analysed under a microscope. A calculation was used to measure the airborne fibre levels (all respirable fibres were counted, not just asbestiform). The result of the air test/s in fibres per millilitre of air, were

Sample	Type	Reason for Sampling	Location	Result
A-17613-19-001-1	Reassurance	During excavation works	1	< 0.01 f/ml
A-17613-19-001-2	Reassurance	During excavation works	2	< 0.01 f/ml
A-17613-19-001-3	Reassurance	During excavation works	3	< 0.01 f/ml
A-17613-19-001-4	Reassurance	During excavation works	4	< 0.01 f/ml
A-17613-19-001-5	Reassurance	During excavation works	5	< 0.01 f/ml
A-17613-19-001-6	Reassurance	During excavation works	6	< 0.01 f/ml

Analyst	Darren Swain	Signature		Time	15:25	Date	27/01/2023
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Opinions and interpretations contained within this report are outside of our UKAS accreditation. Sampling and testing was carried out in accordance with documented in-house test methods and procedures based on HSG248 Ed2 (Test Procedures 1 and 2). Any deviations from these procedures are noted within the comments section of the report.

Job No	17613	Client Job No		Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT						



Job No	17613	Client Job No		Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT						

Air Test Results

Sample No	Pump No	Cowl No	Location	Start Time	Finish Time	Volume	LOQ	Reported Result
A-17613-19-001-1	SP-049	D01	1	11:46	12:44	681.5	0.01	< 0.01 f/ml
A-17613-19-001-2	SP-012	D02	2	11:46	12:44	696	0.01	< 0.01 f/ml
A-17613-19-001-3	SP-012	D05	3	12:49	13:50	488	0.01	< 0.01 f/ml
A-17613-19-001-4	SP-049	D06	4	12:51	13:53	496	0.01	< 0.01 f/ml
A-17613-19-001-5	SP-012	D01	5	13:56	14:56	480	0.01	< 0.01 f/ml
A-17613-19-001-6	SP-049	D02	6	13:56	14:56	480	0.01	< 0.01 f/ml

LOQ = Limit of quantification

Sample No	Start flow rate l/m	Finish flow rate l/m	Actual flow rate l/m	Total time (minutes)	Fibre count	Fields counted	Calculated Result
A-17613-19-001-1	12	11.5	11.75	58	0	200	0.000
A-17613-19-001-2	12	12	12	58	0	200	0.000
A-17613-19-001-3	8	8	8	61	0	200	0.000
A-17613-19-001-4	8	8	8	62	0	200	0.000
A-17613-19-001-5	8	8	8	60	0	200	0.000
A-17613-19-001-6	8	8	8	60	0	200	0.000

Microscope no	MS-04	Samples scanned using x10 objective	Yes
Laboratory type	Mobile	Exposed Filter Diameter (mm ²)	22.5
Laboratory reference	HV18 LWM	Flowmeter No:	FLO-02
NPL Test Slide No	NPL-04	Flowmeter No:	FLO-05
Stage Micrometer No	SM-02	NPL Band 5 Achieved:	Yes
Barometer / Thermometer Reference	TB-002	Graticule Diameter measured (µm):	100
Air pressure (mb)	N/A	Timepiece Reference	MOB-01
Temperature (°C):	N/A	Field Blank Result	N/A

Sampling and Testing is carried out in accordance with current legislation and guidance as detailed in the analysts guide HSG248 Ed2 and company in-house Technical Procedures.

NOTE:

(*) UNCERTAINTY OF MEASUREMENT: The lower limit of accurate measurement (fibre level, f/ml) of the above method is stated in HSG248 Ed2 as about 0.010 fibres/ml. When the sample volume is equal to or greater than 480 litres and 200 graticule fields are examined, the result may be expressed as <0.01f/ml. For sample volumes below 480 litres and counts of less than 200 graticules, the lower limit of accurate measurement will be higher.

(+) ACTUAL FLOW RATE: Determined by averaging the calibrated intermediate flow rate and/or where differences in ambient temperatures and/or pressures between the calibration and sampling sites are greater than 5%.

Analyst	Darren Swain	Signature		Date	27/01/2023
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Job No	17613	Client Job No	Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT					

Photographs



Photograph 21106



Photograph 21107

Job No	17613	Client Job No	Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT					



Photograph 21108



Photograph 21109



Photograph 21110

Job No	17613	Client Job No		Report No	A-17613-19-001 - Issue 1	Date	27/01/2023
Site Address	Albert Murray Close, Gravesend, DA12 1LT						



Photograph 21111

Appendix F

Laboratory Analysis Results



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Tunbridge Wells
Kent
TN2 4XJ

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

DETS Report No: 22-06909

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 12/08/2022

Sample Scheduled Date: 15/08/2022

Report Issue Number: 1

Reporting Date: 19/08/2022

Authorised by:



Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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: 22-06909	Date Sampled	09/08/22	09/08/22	09/08/22	09/08/22	09/08/22
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	TP03A	TP03A	TP03B	TP03C	TP03D
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	0.20	0.40	0.30	0.30	0.30
Reporting Date: 19/08/2022	DETS Sample No	609069	609070	609071	609072	609073

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



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



Soil Analysis Certificate						
DETS Report No: 22-06909	Date Sampled	09/08/22	09/08/22	09/08/22	09/08/22	09/08/22
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	TP03D	TP03E	TP03E	TP03F	TP03F
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	0.80	0.25	0.70	0.20	0.40
Reporting Date: 19/08/2022	DETS Sample No	609074	609075	609076	609077	609078

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



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



Soil Analysis Certificate						
DETS Report No: 22-06909	Date Sampled	09/08/22	09/08/22	09/08/22		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	TP03G	TP03H	TP03I		
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 4768	Depth (m)	0.50	0.30	0.40		
Reporting Date: 19/08/2022	DETS Sample No	609079	609080	609081		

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 oven-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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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 22-06909

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 19/08/2022

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 @ 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 22-06909

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 19/08/2022

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



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Derwentside Environmental Testing Services Ltd
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Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-00485

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: None Supplied

Sample Receipt Date: 16/01/2023

Sample Scheduled Date: 16/01/2023

Report Issue Number: 1

Reporting Date: 20/01/2023

Authorised Signatory

David Kinnison
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Maidstone
Kent ME17 2JN
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Soil Analysis Certificate

DETS Report No: 23-00485	Date Sampled	12/01/23	12/01/23	12/01/23	12/01/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	VAL HP101	VAL HP102	Import 01	VAL HP103
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.10	0.15	0.05	0.10
Reporting Date: 20/01/2023	DETS Sample No	628102	628103	628104	628105

Determinand	Unit	RL	Accreditation	(n)			
Asbestos Screen (%)	N/A	N/A	ISO17025	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/A	MCERTS			8.9	
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			3691	
Total Sulphate as SO ₄	%	< 0.02	MCERTS			0.37	
Sulphide	mg/kg	< 5	NONE			< 5	
Organic Matter (SOM)	%	< 0.1	MCERTS			3.6	
TOC (Total Organic Carbon)	%	< 0.1	MCERTS			2.1	
Antimony (Sb)	mg/kg	< 1	NONE			5.4	
Arsenic (As)	mg/kg	< 2	MCERTS			13	
Barium (Ba)	mg/kg	< 2.5	MCERTS			126	
W/S Boron	mg/kg	< 1	NONE			< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS			0.4	
Chromium (Cr)	mg/kg	< 2	MCERTS			17	
Chromium (hexavalent)	mg/kg	< 2	NONE			< 2	
Copper (Cu)	mg/kg	< 4	MCERTS			5.9	
Lead (Pb)	mg/kg	< 3	MCERTS			137	
Mercury (Hg)	mg/kg	< 1	MCERTS			< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS			14	
Selenium (Se)	mg/kg	< 2	MCERTS			< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS			131	
Total Phenols (monohydric)	mg/kg	< 1	NONE			< 2	

Analytical results are expressed on a dry weight basis where samples are oven-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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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-00485	Date Sampled:	12/01/23	12/01/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled:	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	Import 01	VAL HP103		
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	0.05	0.10		
Reporting Date: 20/01/2023	DETS Sample No	628104	628105		

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.28	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	0.16	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.86	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	0.82	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.51	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	0.51	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.60	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.28	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.59	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.33	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.31	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	5.3	< 1.6		

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Soil Analysis Certificate - EPH Texas Banded					
DETS Report No: 23-00485	Date Sampled	12/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Import 01			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: None Supplied	Depth (m)	0.05			
Reporting Date: 20/01/2023	DETS Sample No	626104			

Determinand	Unit	RL	Accreditation	(n)				
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	6				
EH 1D Total								
EPH Texas (>C21 - C40) :	mg/kg	< 6	MCERTS	13				
EH 1D Total								
EPH Texas (C6 - C40) :	mg/kg	< 6	NONE	19				
HS 1D MS+EH 1D Total								

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-00485

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: None Supplied

Reporting Date: 20/01/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
628104	Import 01	None Supplied	0.05	10.7	Brown sandy gravel with stones and concrete
628105	VAL HP103	None Supplied	0.10	14.6	Brown sandy clay

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

Insufficient Sample ¹⁰

Unsuitable Sample ¹⁰



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00485

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: None Supplied

Reporting Date: 20/01/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators
DETS Report No: 23-00485
Sevenoaks Environmental Consultancy Ltd
Site Reference: Gravesend
Project / Job Ref: 4768
Order No: None Supplied
Reporting Date: 20/01/2023

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
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



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DETS Report No: 23-00635

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 19/01/2023

Sample Scheduled Date: 19/01/2023

Report Issue Number: 0

Reporting Date: 25/01/2023

Authorised by:

Interim Report

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-00635	Date Sampled:	16/01/23	16/01/23	16/01/23	
Sevenoaks Environmental Consultancy Ltd	Time Sampled:	None Supplied	None Supplied	None Supplied	
Site Reference: Gravesend	TP / BH No	VAL HP105	VAL HP106	VAL HP107	
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: 4768	Depth (m)	0.05	0.05	0.05	
Reporting Date: 25/01/2023	DETS Sample No	628659	628660	628661	

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	0.82	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	0.90	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS		0.42	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	3.27	0.14	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS		0.63	0.16	
Pyrene	mg/kg	< 0.1	MCERTS	7.98	0.56	0.15	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	3.25	0.35	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	2.62	0.32	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	2.75	0.47	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.09	0.15	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	2.51	0.40	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.36	0.30	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.02	0.24	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS		4	< 3.6	

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Water Analysis Certificate

DETS Report No: 23-00635	Date Sampled	16/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	CHAMBER 03			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 25/01/2023	DETS Sample No	628662			

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/A	ISO17025	8.3			
Thiocyanate as SCN	ug/l	< 10	NONE	< 10			
Sulphate as SO ₄	mg/l	< 1	ISO17025	125			
Sulphide	mg/l	< 0.1	NONE	< 0.1			
Total Organic Carbon (TOC)	mg/l	< 0.1	NONE	25.5			
Arsenic (dissolved)	ug/l	< 5	ISO17025	101			
Boron (dissolved)	ug/l	< 5	ISO17025	117			
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	0.7			
Chromium (dissolved)	ug/l	< 5	ISO17025	23			
Chromium (hexivalent)	ug/l	< 20	NONE	< 20			
Copper (dissolved)	ug/l	< 5	ISO17025	142			
Lead (dissolved)	ug/l	< 5	ISO17025	< 5			
Mercury (dissolved)	ug/l	< 0.05	ISO17025	1.05			
Nickel (dissolved)	ug/l	< 5	ISO17025	52			
Selenium (dissolved)	ug/l	< 5	ISO17025	64			
Zinc (dissolved)	ug/l	< 2	ISO17025	< 2			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10			
EPH (C10 - C40) : EPH 10 Total	ug/l	< 10	NONE	< 10			

Subcontracted analysis ⁽¹⁾

Insufficient sample ⁽¹⁾

Unavailable Sample ⁽¹⁾



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-00635

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 25/01/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
628659	VAL HP105	None Supplied	0.05	4.2	Brown sandy gravel with stones
628660	VAL HP106	None Supplied	0.05	6.8	Brown sandy gravel with stones
628661	VAL HP107	None Supplied	0.05	6.3	Brown sandy clay with stones

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

Insufficient Sample ¹⁵

Unsuitable Sample ¹⁶



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00635

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 25/01/2023

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 @ 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received

Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00635

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 25/01/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid/liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C9-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid/liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid/liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (al: C5-C8, 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 liquid/liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (al: C5-C8, 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 liquid/liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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List of HWOL Acronyms and Operators

DETS Report No: 23-00635

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 25/01/2023

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 1D 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

EPH (C10 - C40) - EH 1D Total



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DETS Report No: 23-00635

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 19/01/2023

Sample Scheduled Date: 19/01/2023

Report Issue Number: 1

Reporting Date: 30/01/2023



Dates of laboratory activities for each tested analyte are available upon request.

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.



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Soil Analysis Certificate					
DETS Report No: 23-00635	Date Sampled	16/01/23	16/01/23	16/01/23	16/01/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	VAL HP104	VAL HP105	VAL HP106	VAL HP107
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	0.05	0.05	0.05	0.05
Reporting Date: 30/01/2023	DETS Sample No	628658	628659	628660	628661

Determinand	Unit	RL	Accreditation	(n)	(n)
Asbestos Screen (S)	N/A	N/A	ISO17025	Not Detected	

Analytical results are expressed on a dry weight basis where samples are oven-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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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-00635	Date Sampled:	16/01/23	16/01/23	16/01/23	
Sevenoaks Environmental Consultancy Ltd	Time Sampled:	None Supplied	None Supplied	None Supplied	
Site Reference: Gravesend	TP / BH No	VAL HP105	VAL HP106	VAL HP107	
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: 4768	Depth (m)	0.05	0.05	0.05	
Reporting Date: 30/01/2023	DETS Sample No	628659	628660	628661	

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	0.82	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	0.90	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	12.80	0.42	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	3.27	0.14	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	10.60	0.63	0.16	
Pyrene	mg/kg	< 0.1	MCERTS	7.98	0.56	0.15	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	3.25	0.35	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	2.62	0.32	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	2.75	0.47	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.09	0.15	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	2.51	0.40	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.36	0.30	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.02	0.24	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	51.3	4	< 1.6	

(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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Water Analysis Certificate

DETS Report No: 23-00635	Date Sampled	16/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	CHAMBER 03			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 30/01/2023	DETS Sample No	628662			

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/A	ISO17025	8.3			
Total Cyanide	ug/l	< 5	NONE	< 5			
Free Cyanide	ug/l	< 5	NONE	< 5			
Thiocyanate as SCN	ug/l	< 10	NONE	< 10			
Sulphate as SO ₄	mg/l	< 1	ISO17025	125			
Sulphide	mg/l	< 0.1	NONE	< 0.1			
Total Organic Carbon (TOC)	mg/l	< 0.1	NONE	25.5			
Arsenic (dissolved)	ug/l	< 5	ISO17025	101			
Boron (dissolved)	ug/l	< 5	ISO17025	117			
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	0.7			
Chromium (dissolved)	ug/l	< 5	ISO17025	23			
Chromium (hexavalent)	ug/l	< 20	NONE	< 20			
Copper (dissolved)	ug/l	< 5	ISO17025	142			
Lead (dissolved)	ug/l	< 5	ISO17025	< 5			
Mercury (dissolved)	ug/l	< 0.05	ISO17025	1.05			
Nickel (dissolved)	ug/l	< 5	ISO17025	52			
Selenium (dissolved)	ug/l	< 5	ISO17025	64			
Zinc (dissolved)	ug/l	< 2	ISO17025	< 2			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10			
EPH (C10 - C40) : EH_1D_Total	ug/l	< 10	NONE	< 10			

Subcontracted analysis ¹⁰

Insufficient sample ¹¹

Unsuitable Sample ¹²



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Water Analysis Certificate - Speciated PAH							
DETS Report No: 23-00635	Date Sampled	16/01/23					
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied					
Site Reference: Gravesend	TP / BH No	CHAMBER 03					
Project / Job Ref: 4768	Additional Refs	None Supplied					
Order No: 4768	Depth (m)	None Supplied					
Reporting Date: 30/01/2023	DETS Sample No	628662					

Determinand	Unit	RL	Accreditation				
Naphthalene	ug/l	< 0.01	NONE	0.01			
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01			
Acenaphthene	ug/l	< 0.01	NONE	< 0.01			
Fluorene	ug/l	< 0.01	NONE	< 0.01			
Phenanthrene	ug/l	< 0.01	NONE	< 0.01			
Anthracene	ug/l	< 0.01	NONE	< 0.01			
Fluoranthene	ug/l	< 0.01	NONE	0.02			
Pyrene	ug/l	< 0.01	NONE	0.02			
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01			
Chrysene	ug/l	< 0.01	NONE	< 0.01			
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01			
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01			
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01			
Benzo(ghi)perylene	ug/l	0.008	NONE	< 0.008			
Total EPA-16 PAHs	ug/l	< 0.16	NONE	< 0.16			



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-00635

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
628659	VAL HP105	None Supplied	0.05	4.2	Brown sandy gravel with stones
628660	VAL HP106	None Supplied	0.05	6.8	Brown sandy gravel with stones
628661	VAL HP107	None Supplied	0.05	6.3	Brown sandy clay with stones

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

Insufficient Sample ¹⁵

Unsuitable Sample ¹⁶



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00635

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D: Dried

AR: As Received

Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00635

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid/liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C9-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid/liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid/liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid/liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (al: C5-C8, 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 liquid/liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (al: C5-C8, 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 liquid/liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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List of HWOL Acronyms and Operators

DETS Report No: 23-00635

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

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 1D 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

EPH (C10 - C40) - EH_1D_Total



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DETS Report No: 23-00871

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 24/01/2023

Sample Scheduled Date: 24/01/2023

Report Issue Number: 1

Reporting Date: 30/01/2023



Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 23-00871	Date Sampled	18/01/23	20/01/23	20/01/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	VAL HP108	VAL HP109	VAL HP110		
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 4768	Depth (m)	0.05	0.05	0.05		
Reporting Date: 30/01/2023	DETS Sample No	629610	629611	629612		

Determinand	Unit	RL	Accreditation			
Lead (Pb)	mg/kg	< 3	MCERTS	6	121	137

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 (5)



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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-00871	Date Sampled	18/01/23	20/01/23	20/01/23	
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Gravesend	TP / BH No	VAL HP108	VAL HP109	VAL HP110	
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: 4768	Depth (m)	0.05	0.05	0.05	
Reporting Date: 30/01/2023	DETS Sample No	629610	629611	629612	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.16	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.15	0.31	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.13	0.28	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.13	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.19	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.18	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.17	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Di-benz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-00871

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
629610	VAL HP108	None Supplied	0.05	14.7	Brown sandy clay
629611	VAL HP109	None Supplied	0.05	8.7	Brown sandy clay with stones
629612	VAL HP110	None Supplied	0.05	10.7	Brown sandy clay with chalk and brick

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

Insufficient Sample ¹⁵

Unsuitable Sample ¹⁶

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00871

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-00871

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

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



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DETS Report No: 23-00985

Site Reference: Gravesend
Project / Job Ref: 4768
Order No: 4768
Sample Receipt Date: 19/01/2023
Sample Scheduled Date: 25/01/2023
Report Issue Number: 1
Reporting Date: 30/01/2023



Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Water Analysis Certificate					
DETS Report No: 23-00985	Date Sampled	16/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	CHAMBER 03			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 30/01/2023	DETS Sample No	630154			

Determinand	Unit	RL	Accreditation				
Ammonia as NH ₃	ug/l	< 50	ISO17025	161			

Subcontracted analysis ¹⁰¹

Insufficient sample ¹⁰²

Unsuitable Sample ¹⁰³

Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-00985

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 30/01/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid-liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid-liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid-liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C9-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid-liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid-liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid-liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid-liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (al: 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 liquid-liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (al: 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 liquid-liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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List of HWOL Acronyms and Operators

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



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DETS Report No: 23-01064

Site Reference: Gravesend
Project / Job Ref: 4768
Order No: 4768
Sample Receipt Date: 27/01/2023
Sample Scheduled Date: 27/01/2023
Report Issue Number: 1
Reporting Date: 03/02/2023


Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate					
DETS Report No: 23-01064	Date Sampled	24/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 FILL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 03/02/2023	DETS Sample No	630485			

Determinand	Unit	RL	Accreditation	(%)			
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025	Detected			
Sample Matrix ⁽¹⁾	Material Type	N/a	NONE	Chrysotile present in bundles			
Asbestos Type ⁽¹⁾	PLM Result	N/a	ISO17025	Chrysotile			
pH	pH Units	N/a	ISO17025	7.5			
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	ISO17025	11980			
Total Sulphate as SO ₄	%	< 0.02	ISO17025	1.20			
Sulphide	mg/kg	< 5	NONE	< 5			
Organic Matter (SOM)	%	< 0.1	ISO17025	8.9			
TOC (Total Organic Carbon)	%	< 0.1	ISO17025	5.2			
Antimony (Sb)	mg/kg	< 1	NONE	3.8			
Arsenic (As)	mg/kg	< 2	ISO17025	8			
Barium (Ba)	mg/kg	< 2.5	ISO17025	125			
W/S Boron	mg/kg	< 1	NONE	1.8			
Cadmium (Cd)	mg/kg	< 0.2	ISO17025	0.4			
Chromium (Cr)	mg/kg	< 2	ISO17025	20			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	ISO17025	33			
Lead (Pb)	mg/kg	< 3	ISO17025	399			
Mercury (Hg)	mg/kg	< 1	ISO17025	< 1			
Nickel (Ni)	mg/kg	< 3	ISO17025	16			
Selenium (Se)	mg/kg	< 2	ISO17025	< 2			
Zinc (Zn)	mg/kg	< 3	ISO17025	173			
Total Phenols (monohydric)	mg/kg	< 1	NONE	< 2			

Analytical results are expressed on a dry weight basis where samples are oven-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)

(1) 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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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-01064	Date Sampled	24/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 FILL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 03/02/2023	DETS Sample No	630485			

Determinand	Unit	RL	Accreditation	(%)				
Naphthalene	mg/kg	< 0.1	ISO17025	< 0.1				
Acenaphthylene	mg/kg	< 0.1	ISO17025	< 0.1				
Acenaphthene	mg/kg	< 0.1	ISO17025	< 0.1				
Fluorene	mg/kg	< 0.1	ISO17025	< 0.1				
Phenanthrene	mg/kg	< 0.1	ISO17025	1.81				
Anthracene	mg/kg	< 0.1	ISO17025	0.31				
Fluoranthene	mg/kg	< 0.1	ISO17025	4.36				
Pyrene	mg/kg	< 0.1	ISO17025	3.81				
Benzo(a)anthracene	mg/kg	< 0.1	ISO17025	2.17				
Chrysene	mg/kg	< 0.1	ISO17025	2.03				
Benzo(b)fluoranthene	mg/kg	< 0.1	ISO17025	2.21				
Benzo(k)fluoranthene	mg/kg	< 0.1	ISO17025	0.89				
Benzo(a)pyrene	mg/kg	< 0.1	ISO17025	2.20				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	ISO17025	0.98				
Dibenzo(a,h)anthracene	mg/kg	< 0.1	ISO17025	0.17				
Benzo(ghi)perylene	mg/kg	< 0.1	ISO17025	0.69				
Total EPA-16 PAHs	mg/kg	< 1.6	ISO17025	21.6				

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



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Soil Analysis Certificate - EPH Texas Banded					
DETS Report No: 23-01064	Date Sampled	24/01/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 FILL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 03/02/2023	DETS Sample No	630405			

Determinand	Unit	RL	Accreditation	(%)				
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	< 0.05				
EPH Texas (>C8 - C10) : BH 1D Total	mg/kg	< 1	ISO17025	< 1				
EPH Texas (>C10 - C12) : BH 1D Total	mg/kg	< 1	ISO17025	< 1				
EPH Texas (>C12 - C16) : BH 1D Total	mg/kg	< 1	ISO17025	< 1				
EPH Texas (>C16 - C21) : BH 1D Total	mg/kg	< 1	ISO17025	27				
EPH Texas (>C21 - C40) : BH 1D Total	mg/kg	< 6	ISO17025	106				
EPH Texas (C6 - C40) : HS 1D MS+BH 1D Total	mg/kg	< 6	NONE	133				

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



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-01064

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 03/02/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
630485	Chamber 02 FILL	None Supplied	None Supplied	34.9	Black loam with vegetation and concrete

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

Insufficient Sample ¹⁰

Unsuitable Sample ¹⁰¹



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4480

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-01064

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 03/02/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-01064

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 03/02/2023

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 1D 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

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



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DETS Report No: 23-01408

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 03/02/2023

Sample Scheduled Date: 03/02/2023

Report Issue Number: 1

Reporting Date: 10/02/2023



Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate					
DETS Report No: 23-01408	Date Sampled	27/01/23	27/01/23	27/01/23	30/01/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	TP03 VAL Side E01	TP03 VAL Side W01	TP03 VAL Side S02	TP03 VAL Side N03
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 10/02/2023	DETS Sample No	631966	631967	631968	631969

Determinand	Unit	RL	Accreditation					
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Lead (Pb)	mg/kg	< 3	MCERTS					

Analytical results are expressed on a dry weight basis where samples are oven-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: 23-01408	Date Sampled	30/01/23	30/01/23	01/02/23	01/02/23	01/02/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	TP03 VAL Base 02	TP03 VAL Base 03	VAL HP111	VAL HP112	VAL HP113
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	None Supplied	None Supplied	0.05	0.05	0.05
Reporting Date: 10/02/2023	DETS Sample No	631971	631972	631973	631974	631975

Determinand	Unit	RL	Accreditation					
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025	Not Detected	Not Detected			
Lead (Pb)	mg/kg	< 3	MCERTS			256	708	73

Analytical results are expressed on a dry weight basis where samples are oven-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: 23-01408		Date Sampled	01/02/23		
Sevenoaks Environmental Consultancy Ltd		Time Sampled	None Supplied		
Site Reference: Gravesend		TP / BH No	VAL HP114		
Project / Job Ref: 4768		Additional Refs	None Supplied		
Order No: 4768		Depth (m)	0.05		
Reporting Date: 10/02/2023		DETS Sample No	631976		

Determinand	Unit	RL	Accreditation				
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025				
Lead (Pb)	mg/kg	< 3	MCERTS	20			

Analytical results are expressed on a dry weight basis where samples are oven-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: 23-01408	Date Sampled	01/02/23	01/02/23	01/02/23	01/02/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gravesend	TP / BH No	VAL HP111	VAL HP112	VAL HP113	VAL HP114
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	0.05	0.05	0.05	0.05
Reporting Date: 10/02/2023	DETS Sample No	631973	631974	631975	631976

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	0.16	0.67	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.39	0.94	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.13	0.88	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.50	1.19	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	3.69	20.10	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.55	2.87	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	3.94	29	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	3.22	27.60	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.21	12.50	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	1.16	12.60	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.07	14	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.39	3.91	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.91	14.90	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.53	5.84	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	1.32	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.39	4.78	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	18.2	153	< 3.6	< 3.6



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-01408

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 10/02/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
631973	VAL HP111	None Supplied	0.05	14.7	Brown sandy clay with stones
631974	VAL HP112	None Supplied	0.05	14.6	Black sandy clay with stones
631975	VAL HP113	None Supplied	0.05	10.8	Brown sandy clay with stones
631976	VAL HP114	None Supplied	0.05	8.3	Brown sandy clay with stones

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

Insufficient Sample ¹¹

Unsuitable Sample ¹⁰⁵

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-01408

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 10/02/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-01408

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 10/02/2023

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



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DETS Report No: 23-01694

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 09/02/2023

Sample Scheduled Date: 09/02/2023

Report Issue Number: 1

Reporting Date: 17/02/2023



Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate					
DETS Report No: 23-01694	Date Sampled	06/02/23	06/02/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	Type 01 Import 01 A-C	Topsoil Import 01 A-C		
Project / Job Ref: 4768	Additional Refs	A, B + C Composite	A, B + C Composite		
Order No: 4768	Depth (m)	None Supplied	None Supplied		
Reporting Date: 17/02/2023	DETS Sample No	633291	633292		

Determinand	Unit	RL	Accreditation	(%)				
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025	Not Detected	Not Detected			
pH	pH Units	N/a	MCERTS	8.2	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	824	422			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.08	0.04			
Sulphide	mg/kg	< 5	NONE	< 5	< 5			
Organic Matter (SOM)	%	< 0.1	MCERTS	6.5	4.6			
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	3.8	2.7			
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1			
Arsenic (As)	mg/kg	< 2	MCERTS	3	11			
Barium (Ba)	mg/kg	< 2.5	MCERTS	31	22			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	5	23			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	6	13			
Lead (Pb)	mg/kg	< 3	MCERTS	< 3	17			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	10	14			
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2			
Zinc (Zn)	mg/kg	< 3	MCERTS	10	46			
Total Phenols (monohydric)	mg/kg	< 1	NONE	< 2	< 2			

Analytical results are expressed on a dry weight basis where samples are oven-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 (5)

(1) 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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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-01694	Date Sampled:	06/02/23	06/02/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled:	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	Type 01 Import 01 A-C	Topsoil Import 01 A-C		
Project / Job Ref: 4768	Additional Refs	A, B + C Composite	A, B + C Composite		
Order No: 4768	Depth (m)	None Supplied	None Supplied		
Reporting Date: 17/02/2023	DETS Sample No	633291	633292		

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.15		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.12		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6		

(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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Soil Analysis Certificate - EPH Texas Banded					
DETS Report No: 23-01694	Date Sampled	06/02/23	06/02/23		
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Gravesend	TP / BH No	Type 01 Import 01 A-C	Topsoil Import 01 A-C		
Project / Job Ref: 4768	Additional Refs	A, B + C Composite	A, B + C Composite		
Order No: 4768	Depth (m)	None Supplied	None Supplied		
Reporting Date: 17/02/2023	DETS Sample No	613291	613292		

Determinand	Unit	RL	Accreditation	(%)		
EPH Texas (C6 - C8) :	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
HS 1D MS Total						
EPH Texas (>C8 - C10) :	mg/kg	< 1	MCERTS	< 1	< 1	
BH 1D Total						
EPH Texas (>C10 - C12) :	mg/kg	< 1	MCERTS	< 1	< 1	
BH 1D Total						
EPH Texas (>C12 - C16) :	mg/kg	< 1	MCERTS	< 1	2	
BH 1D Total						
EPH Texas (>C16 - C21) :	mg/kg	< 1	MCERTS	< 1	18	
BH 1D Total						
EPH Texas (>C21 - C40) :	mg/kg	< 6	MCERTS	< 6	105	
BH 1D Total						
EPH Texas (C6 - C40) :	mg/kg	< 6	NONE	< 6	125	
HS 1D MS+BH 1D Total						

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



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-01694

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 17/02/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
633291	Type 01 Import 01 A-C	A, B + C Composite	None Supplied	2.8	Brown gravel with stones
633292	Topsoil Import 01 A-C	A, B + C Composite	None Supplied	15.8	Black loamy sand with vegetation

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

Insufficient Sample ¹²

Unsuitable Sample ¹⁰¹



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-01694

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 17/02/2023

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 FOC 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-01694

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 17/02/2023

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 1D 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

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



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DETS Report No: 23-01833

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 10/02/2023

Sample Scheduled Date: 10/02/2023

Report Issue Number: 1

Reporting Date: 20/02/2023



Operations Director

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate					
DETS Report No: 23-01833	Date Sampled	09/02/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 VAL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 20/02/2023	DETS Sample No	633992			

Determinand	Unit	RL	Accreditation				
Asbestos Screen (H)	N/a	N/a	ISO17025	Not Detected			
pH	pH Units	N/a	MCERTS	7.6			
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	440			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.04			
Sulphide	mg/kg	< 5	NONE	< 5			
Organic Matter (SOM)	%	< 0.1	MCERTS	1			
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	0.6			
Antimony (Sb)	mg/kg	< 1	NONE	< 1			
Arsenic (As)	mg/kg	< 2	MCERTS	4			
Barium (Ba)	mg/kg	< 2.5	MCERTS	37			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	15			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	20			
Lead (Pb)	mg/kg	< 3	MCERTS	26			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	8			
Selenium (Se)	mg/kg	< 2	MCERTS	< 2			
Zinc (Zn)	mg/kg	< 3	MCERTS	38			
Total Phenols (monohydric)	mg/kg	< 1	NONE	< 2			

Analytical results are expressed on a dry weight basis where samples are oven-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 (5)



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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-01833	Date Sampled	09/02/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 VAL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 20/02/2023	DETS Sample No	613992			

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenzo(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6			



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Soil Analysis Certificate - EPH Texas Banded					
DETS Report No: 23-01833	Date Sampled	09/02/23			
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied			
Site Reference: Gravesend	TP / BH No	Chamber 02 VAL			
Project / Job Ref: 4768	Additional Refs	None Supplied			
Order No: 4768	Depth (m)	None Supplied			
Reporting Date: 20/02/2023	DETS Sample No	613992			

Determinand	Unit	RL	Accreditation				
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	< 0.05			
EPH Texas (>C8 - C10) : BH 1D Total	mg/kg	< 1	MCERTS	< 1			
EPH Texas (>C10 - C12) : BH 1D Total	mg/kg	< 1	MCERTS	< 1			
EPH Texas (>C12 - C16) : BH 1D Total	mg/kg	< 1	MCERTS	< 1			
EPH Texas (>C16 - C21) : BH 1D Total	mg/kg	< 1	MCERTS	< 1			
EPH Texas (>C21 - C40) : BH 1D Total	mg/kg	< 6	MCERTS	17			
EPH Texas (C6 - C40) : HS 1D MS+BH 1D Total	mg/kg	< 6	NONE	17			



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-01833

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 20/02/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
633992	Chamber 02 VAL	None Supplied	None Supplied	10.7	Brown sandy clay with vegetation

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

Insufficient Sample ¹⁰

Unsuitable Sample ¹⁰¹



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-01833

Sevensoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 20/02/2023

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 @ 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-01833

Sevenoaks Environmental Consultancy Ltd

Site Reference: Gravesend

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 20/02/2023

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 1D 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

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



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DETS Report No: 23-15589

Site Reference: Armourv Drive

Project / Job Ref: 4768

Order No: 4768

Sample Receipt Date: 22/12/2023

Sample Scheduled Date: 22/12/2023

Report Issue Number: 1

Reporting Date: 05/01/2024



Dates of laboratory activities for each tested analyte are available upon request.

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.



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Soil Analysis Certificate					
DETS Report No: 23-15589	Date Sampled	20/12/23	20/12/23	20/12/23	20/12/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Armoury Drive	TP / BH No	TP04 Base 01	TP04 Base 02	TP04 Side S01	TP04 Side W01
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/01/2024	DETS Sample No	692022	692023	692024	692025

Determinand	Unit	RL	Accreditation	(N)	(N)	(N)
Lead (Pb)	mg/kg	< 3	MCERTS	< 3	5	20

Analytical results are expressed on a dry weight basis where samples are oven-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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Soil Analysis Certificate - Speciated PAHs									
DETS Report No: 23-15589	Date Sampled	20/12/23	20/12/23	20/12/23	20/12/23	20/12/23	20/12/23	20/12/23	20/12/23
Sevenoaks Environmental Consultancy Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Armoury Drive	TP / BH No	TP04 Base 01	TP04 Base 02	TP04 Side S01	TP04 Side W01	TP04 Side N01	TP04 Side S01	TP04 Side W01	TP04 Side N01
Project / Job Ref: 4768	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 4768	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/01/2024	DETS Sample No	692022	692023	692024	692025	692026	692022	692023	692024

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)	(n)
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.41	0.51	0.51
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.42	0.95	0.95
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.32	0.81	0.81
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.13	0.35	0.35
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.17	0.41	0.41
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.16	0.43	0.43
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.18	0.18
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.16	0.37	0.37
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.10	0.25	0.25
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.21	0.21
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	1.9	4.5	4.5

(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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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-15589

Sevensoaks Environmental Consultancy Ltd

Site Reference: Armoury Drive

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 05/01/2024

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
692022	TP04 Base 01	None Supplied	None Supplied	5.7	Brown sandy gravel with stones
692023	TP04 Base 02	None Supplied	None Supplied	18.1	Brown sandy clay
692024	TP04 Side S01	None Supplied	None Supplied	5.1	Brown sandy clay with stones
692025	TP04 Side W01	None Supplied	None Supplied	4.3	Brown sandy gravel with stones
692026	TP04 Side N01	None Supplied	None Supplied	7.7	Brown sandy gravel with stones and concrete

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

Insufficient Sample ¹⁵

Unsuitable Sample ¹⁶



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-15589

Sevensoaks Environmental Consultancy Ltd

Site Reference: Armoury Drive

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 05/01/2024

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 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 @ 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 (al: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, al: 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 UQM (al: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, al: 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 (C5-C8 & C8-C10)	Determination of hydrocarbons C5-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received



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List of HWOL Acronyms and Operators

DETS Report No: 23-15589

Sevenoaks Environmental Consultancy Ltd

Site Reference: Armoury Drive

Project / Job Ref: 4768

Order No: 4768

Reporting Date: 05/01/2024

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



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DETS Report No: 24-07554

Site Reference: 4768 - Gravesend
Project / Job Ref: 4768
Order No: 4768
Sample Receipt Date: 04/07/2024
Sample Scheduled Date: 04/07/2024
Report Issue Number: 1
Reporting Date: 10/07/2024


Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate

DETS Report No: 24-07554	~Date Sampled	02/07/24	02/07/24	02/07/24	02/07/24	02/07/24
Sevenoaks Environmental Consultancy Ltd	~Time Sampled	0850	0845	0840	0900	0910
~Site Reference: 4768 - Gravesend	~TP / BH No	TOPSOILVAL01	TOPSOILVAL02	TOPSOILVAL03	TOPSOILVAL05a	TOPSOILVAL07
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 10/07/2024	DETS Sample No	724797	724798	724799	724800	724801

Determinand	Unit	RL	Accreditation					
Asbestos Screen ⁽¹⁾	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.5	8.4	8.2	8.4	8.3
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	231	258	231	265	288
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.02	0.03	0.02	0.03	0.03
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	4.1	4.3	3.8	3.6	4.2
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	2.4	2.5	2.2	2.1	2.4
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	18	15	18	13	15
Barium (Ba)	mg/kg	< 2.5	MCERTS	26	24	35	22	24
W/S Boron	mg/kg	< 1	NONE	1.2	1	< 1	1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	35	31	35	27	32
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	13	16	16	11	12
Lead (Pb)	mg/kg	< 3	MCERTS	23	20	35	20	24
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	15	14	16	12	14
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	49	46	60	43	46
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are oven-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 (5)

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - Speciated PAHs

DETS Report No: 24-07554	~Date Sampled	02/07/24	02/07/24	02/07/24	02/07/24	02/07/24
Sevensoaks Environmental Consultancy Ltd	~Time Sampled	0850	0845	0840	0900	0910
~Site Reference: 4768 - Gravesend	~TP / BH No	TOPSOILVAL01	TOPSOILVAL02	TOPSOILVAL03	TOPSOILVAL05a	TOPSOILVAL07
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 10/07/2024	DETS Sample No	724797	724796	724799	724800	724801

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.48	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.96	0.22	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.85	0.20	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.39	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.42	0.14	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.39	0.14	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.38	0.13	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.21	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.19	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	4.6	< 1.6	< 1.6	< 1.6

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - EPH Texas Banded

DETS Report No: 24-07554	~Date Sampled	02/07/24	02/07/24	02/07/24	02/07/24	02/07/24
Sevenoaks Environmental Consultancy Ltd	~Time Sampled	0850	0845	0840	0900	0910
~Site Reference: 4768 - Gravesend	~TP / BH No	TOPSOILVAL01	TOPSOILVAL02	TOPSOILVAL03	TOPSOILVAL05a	TOPSOILVAL07
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 10/07/2024	DETS Sample No	724797	724798	724799	724800	724801

Determinand	Unit	RL	Accreditation					
EPH Texas (C6 - C8) :	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
HS 1D MS Total								
EPH Texas (>C8 - C10) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
EH 1D Total								
EPH Texas (>C10 - C12) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
EH 1D Total								
EPH Texas (>C12 - C16) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
EH 1D Total								
EPH Texas (>C16 - C21) :	mg/kg	< 1	MCERTS	< 1	5	< 1	< 1	< 1
EH 1D Total								
EPH Texas (>C21 - C40) :	mg/kg	< 6	MCERTS	13	7	< 6	7	23
EH 1D Total								
EPH Texas (C6 - C40) :	mg/kg	< 6	NONE	13	12	< 6	7	23
HS 1D MS+EH 1D Total								

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 24-07554

Sevenoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 10/07/2024

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
724797	TDPSOILVAL01	None Supplied	0.00 - 0.10	11.1	Black sandy loam with stones
724798	TDPSOILVAL02	None Supplied	0.00 - 0.10	10.6	Black sandy loam with stones
724799	TDPSOILVAL03	None Supplied	0.00 - 0.10	8.3	Black sandy loam with stones
724800	TDPSOILVAL05a	None Supplied	0.00 - 0.10	10.9	Black sandy loam
724801	TDPSOILVAL07	None Supplied	0.00 - 0.10	11.3	Black sandy loam with stones and vegetation

Moisture content is part of procedure ED03 & is not an accredited test

Insufficient Sample ⁽¹⁾

Unavailable Sample ⁽²⁾

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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-07554

Sevensoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 10/07/2024

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-dichlorocarbide 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	E013
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, C9-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, all: 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, all: 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 & C9-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C9-C10 by GC-FID	E001

D Dried

AR As Received

~Sample details provided by customer and can affect the validity of results



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List of HWOL Acronyms and Operators

DETS Report No: 24-07554

Sevenoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 10/07/2024

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
~	Sample details provided by customer and can affect the validity of results

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



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DETS Report No: 24-08388

Site Reference: 4768 - Gravesend
Project / Job Ref: 4768
Order No: 4768
Sample Receipt Date: 24/07/2024
Sample Scheduled Date: 24/07/2024
Report Issue Number: 1
Reporting Date: 30/07/2024

Authorised by:



Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate

DETS Report No: 24-08388	~Date Sampled	22/07/24	22/07/24	22/07/24	22/07/24	22/07/24
Sevenoaks Environmental Consultancy Ltd	~Time Sampled	1300	1400	1405	1410	1445
~Site Reference: 4768 - Gravesend	~TP / BH No	TopsolVal08	TopsolVal09	TopsolVal10	TopsolVal11	Shingle02
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 30/07/2024	DETS Sample No	728054	728055	728056	728057	728058

Determinand	Units	RI	Accreditation	(a)	(a)	(a)	(a)	(a)
Asbestos Screen (b)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.0	8.0	7.4	7.2	8.0
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	303	263	209	< 200	1840
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.02	0.03	0.02	< 0.02	0.18
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	4	3.7	2.5	2.3	3.4
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	2.3	2.1	1.5	1.4	0.8
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	16	16	11	14	10
Barium (Ba)	mg/kg	< 2.5	MCERTS	28	23	13	11	68
W/S Boron	mg/kg	< 1	NONE	1.9	1.4	< 1	1.1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.4
Chromium (Cr)	mg/kg	< 2	MCERTS	31	31	20	20	15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	11	10	6	6	14
Lead (Pb)	mg/kg	< 3	MCERTS	36	30	11	10	22
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	14	13	14	15	11
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	53	45	32	39	39
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are oven-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)

~Sample details provided by customer and can affect the validity of results

(a) 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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Soil Analysis Certificate - Speciated PAHs

DETS Report No: 24-08388	~Date Sampled	22/07/24	22/07/24	22/07/24	22/07/24	22/07/24
Sevenoaks Environmental Consultancy Ltd	~Time Sampled	1300	1400	1405	1410	1445
~Site Reference: 4768 - Gravesend	~TP / BH No	TopsolVal08	TopsolVal09	TopsolVal10	TopsolVal11	Shingle02
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 30/07/2024	DETS Sample No	728054	728055	728056	728057	728058

Determinand	Unit	RL	Accreditation	(a)	(a)	(a)	(a)	(a)
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.27	0.18	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.24	0.16	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.16	0.10	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	0.16	0.13	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.22	0.16	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.22	0.14	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.13	0.12	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

~Sample details provided by customer and can affect the validity of results

(a) 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



Normec DETS Limited
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Tel : 01622 850410



Soil Analysis Certificate - EPH Texas Banded

DETS Report No: 24-08388	~Date Sampled	22/07/24	22/07/24	22/07/24	22/07/24	22/07/24
Sevenoaks Environmental Consultancy Ltd	~Time Sampled	1300	1400	1405	1410	1445
~Site Reference: 4768 - Gravesend	~TP / BH No	TopsolVal08	TopsolVal09	TopsolVal10	TopsolVal11	Shingle02
~Project / Job Ref: 4768	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 4768	~Depth (m)	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10	0.00 - 0.10
Reporting Date: 30/07/2024	DETS Sample No	728054	728055	728056	728057	728058

Determinand	Unit	RL	Accreditation	(n)				
EPH Texas (C6 - C8) :	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
HS ID MS Total								
EPH Texas (>C8 - C10) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
BH ID Total								
EPH Texas (>C10 - C12) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
BH ID Total								
EPH Texas (>C12 - C16) :	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
BH ID Total								
EPH Texas (>C16 - C21) :	mg/kg	< 1	MCERTS	3	3	6	6	2
BH ID Total								
EPH Texas (>C21 - C40) :	mg/kg	< 6	MCERTS	24	27	33	38	10
BH ID Total								
EPH Texas (C6 - C40) :	mg/kg	< 6	NONE	28	31	39	44	12
HS ID MS+BH ID Total								

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 24-08388

Sevenoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 30/07/2024

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
728054	TopsoilVal08	None Supplied	0.00 - 0.10	9	Brown clayey sand
728055	TopsoilVal09	None Supplied	0.00 - 0.10	4.6	Brown clayey sand with stones and vegetation
728056	TopsoilVal10	None Supplied	0.00 - 0.10	9	Brown clayey sand with stones and vegetation
728057	TopsoilVal11	None Supplied	0.00 - 0.10	9.3	Brown clayey sand with stones and vegetation
728058	Shingle02	None Supplied	0.00 - 0.10	2.9	Beige gravel with stones

Moisture content is part of procedure ED03 & is not an accredited test

Insufficient Sample ⁽¹⁾

Unavailable Sample ⁽²⁾

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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-08388

Sevensoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 30/07/2024

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-dichloroquinone 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	E013
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, C9-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, all: 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, all: 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

~Sample details provided by customer and can affect the validity of results



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List of HWOL Acronyms and Operators

DETS Report No: 24-08388

Sevenoaks Environmental Consultancy Ltd

~Site Reference: 4768 - Gravesend

~Project / Job Ref: 4768

~Order No: 4768

Reporting Date: 30/07/2024

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
~	Sample details provided by customer and can affect the validity of results
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	

Appendix G

Waste Disposal Tickets

The Hazardous Waste Regulations 2005: Consignment Note

Tel: 01708 886060
Email: info@asbestowastesolutions.co.uk
Web: www.asbestowastesolutions.co.uk



PART A: Notification details

1 Consignment note code: **SEVENO102744**

2 The waste described below is to be removed from

**LAND AT
ALBERT MURRAY CLOSE
GRAVESEND
KENT
DA12 1LT**

3 The waste will be taken to
**PINDEN LTD PINDEN QUARRY
GREEN ST GREEN RD LONGFIELD
DARTFORD KENT DA2 8EB**

4 The waste producer was

**SEVENOAKS ENVIRONMENTAL CONSULTANCY LTD
145A HASTINGS ROAD PEMBURY
TUNBRIDGE WELLS KENT TN2 4JU**

PART B: Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: **ASBESTOS REMOVAL** 2 SIC (2007) for the process giving rise to the waste: **43.99.9**

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
CONCRETE SLAB						
WITH CEMENT	1 7 0 6 0 5		CHRYSTOLE	< 10 %	SOLID	HP5 / HP7
SHEETING						6YD
						OPEN

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
1 7 0 6 0 5	UN 2590	CHRYSTOLE ASBESTOS	9	PG III (E)	Double Bagged / Wrapped

PART C: Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached, tick here ☐)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the manifest number and collection number are:

1

1 Carrier name:

**PINDEN LTD PINDEN QUARRY
GREEN ST GREEN RD LONGFIELD
DARTFORD KENT DA2 8EB**

2 Carrier registration no. **CBDU133922**

3 Vehicle registration no.: **GD14**

Signature

Date **14/03/2023** Time **14:30**

PART D: Consignor's certificate

I certify that the information in A2 and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1. Consignor name:

**On behalf of
SEVENOAKS ENVIRONMENTAL CONSULTANCY LTD
145A HASTINGS ROAD PEMBURY
TUNBRIDGE WELLS KENT TN2 4JU**

Signature

Date **14/03/2023** Time **14:30**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
1 7 0 6 0 5	380	A	D15

1 I received this waste at the address given in A4 on:

Date **14/03/2023** Time **14:30**

2 Vehicle registration no.:

GD14

3 Where waste is rejected please provide details:

I certify that waste permit number:

BV 1674 IL

authorises the management of the waste described in B at the address given in A4.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are: ☐

Signature

Date **14/03/2023**