BROMLEY FARM QUARRY EXTENSION
CUMBERWORTH LANE,
LOWER CUMBERWORTH,
HUDDERSFIELD, HD8 8PD

UPDATED PHASE 2 GEO-ENVIRONMENTAL INVESTIGATION REPORT

Prepared by

SILKSTONE ENVIRONMENTAL LTD

For

WAVIN UK (HOLDINGS) LTD

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SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

7 Hall Annex,
Thorncliffe Park,
Chapeltown,
Sheffield,
S35 2PH.

Tel: 0114 2573487

mail@silkstoneenvironmental.co.uk

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Prepared by:

Paul Stewart BSc (Hons) MSc
Assistant Consultant Engineer
Silkstone Environmental Ltd.

Redacted

Reviewed By:

Nick Pickard BSc CEnv MRICS
Chartered Environmental Surveyor
Silkstone Environmental Ltd.

Redacted

Appraised By:

Dan Goodwin EngTech MInstRE
Senior Geotechnical Project Manager
Silkstone Environmental Ltd.

Redacted

Certified By:

Mark Barrett BSc (Hons) MSc CEng MIMM MIQ
Managing Director
Silkstone Environmental Ltd.

Redacted

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EXECUTIVE SUMMARY

Site Location	The site is located between Upper and Lower Cumberworth, approximately 12km south east of Huddersfield and centered on National Grid Reference 421716, 409084.
History	On site: Agricultural fields with a disused mine shaft in south eastern corner. The former Bromleys quarry extended into a small field in the south western corner which later formed part of the Bromley Farm Quarry historical landfill which was licensed to accept inert, industrial, commercial and household waste between 1982 and 1990
	Off site: Clay pits and unspecified pits within 100m and larger part of the adjoining historic licensed landfill described above. Unspecified heaps within 250m. Former sandstone quarry within 250m. Railway tunnel within 250m.
Proposed Development	Extraction of brick-shale and fireclay as an extension to the infilled Bromley Farm Quarry.
Purpose of Investigation	To assess the potential contamination, ground gas and ground stability risks across the proposed quarry extension area, including that part of the site which is recorded to have formed part of an historic landfill (south western corner).
Scope of Works	The investigation involved 5 no. windowless sampling boreholes to refusal at depths of between 1.00 and 2.80m below existing ground level (begl) with follow-on dynamic probing at three of the locations, the establishment of combination gas and groundwater monitoring wells at three locations and soil, groundwater and surface water sampling for chemical laboratory analysis.
Encountered Strata	Made Ground was encountered at all exploratory hole locations where it was proven to its full depth ranging between 0.31 and 1.00m begl. This was deepest within the area of the recorded historic landfill where it extended to depths of between 0.85 and 1.00m begl. Within this area it comprises a slightly gravelly silty topsoil with gravels of sandstone and occasional brick and indescript pebbles above a gravelly slightly clayey silt in which the gravel component includes sandstone and occasional brick.
	Elsewhere across the site, the Made Ground is generally thinner, extending to depths of between 0.31 and 0.47m begl and comprising a gravelly silty topsoil in which the gravel component comprises sandstone.
	Below the Made Ground, natural soils were encountered within that part of the site forming part of the recorded landfill and one other location and comprised mostly cohesive soils of clay, gravelly silty clay and clayey silt with a smaller proportion of granular coal.
	Within that part of the site forming part of the recorded historic landfill, bedrock was encountered at depths of 1.20-1.95m begl as a thin weathered sandstone and weathered siltstone. Elsewhere across the site, bedrock was encountered as a weathered sandstone from 0.40m begl at WS03, a 0.10m thick coal band at 2.30m begl overlying weathered siltstone at WS04 and as a brownish orange weathered sandstone at 0.47m begl at WS05.
Groundwater	Groundwater was not encountered during windowless sampling, but was recorded during the subsequent monitoring programme at depths ranging between 0.64 and 2.67m begl perched within the shallow soils above the bedrock. It should be noted that groundwater levels can vary on a seasonal basis and may therefore change from the conditions recorded during the investigation.
Historic Landfill	No evidence for the existence of the recorded landfill such as putrescible or other materials consistent with what one would reasonably expect to encounter within inert, industrial, commercial or household waste was noted within the area of the site forming part of the recorded historic landfill (south western corner).
Contamination	The soil contamination assessment for human health has been completed based on an arable farming end use which is anticipated upon completion of quarrying and following restoration. This has identified the following • A single elevated concentration above the soil screening value (SSV) for lead within the Made Ground at a depth of 0.70-1.00m begl at WS01. The concentration determined was 130mg/kg compared to the SSV of 80mg/kg; and • A single elevated concentration above the SSV in thiocyanate from the natural soil at a depth of 1.00-1.80m begl at the same location. The concentration determined was 82mg/kg compared to the SSV of 16mg/kg. The contaminants of concern are located within that part of the site forming part of the recorded historic landfill. Based on the above, the contamination risk to quarry workers has been assessed to be low, but the risk to the health of consumers of any crops grown in fields restored with soils originating from the south western part of the site and to farm workers working with these soils has been assessed to be low/moderate.

	The assessment on the potential risk to the water environment (surface and groundwater) has been completed based on the sampling and chemical analysis of two surface water samples (East Hill Beck adjoining part of the site to the south west and an off-site pond), one sample of perched groundwater (WS01) and soil leachate testing on samples from WS01 for lead and thiocyanate. Whilst his has identified an elevated concentration in monohydric phenol in the pond slightly above the screening value, an elevated concentration in ammoniacal nitrogen and a slightly elevated concentration in phenanthrene (a PAH compound) in the groundwater sample (WS01), the potential risk to controlled waters from the proposed quarry extension has been assessed to be low.
Ground Gas	The gas risk assessment has determined the risk to quarry workers, external pedestrians, neighbours and property from ground gas (principally methane and carbon dioxide) to be very low to low. However, there will be an increased risk associated with any search for the abandoned mineshaft on site (see below), for which the appropriate precautions, such as the use of personal gas alarms, will be necessary.
Risk Overview	Based on the proposed quarry extension for the extraction of brickshale and fireclay within the site, it is considered that the site presents an overall **Very Low to Moderate** geo-environmental risk. The main risks are: • To the health of consumers of crops grown in the fields restored with soil originating from the south western corner of the site containing elevated concentrations of lead and thiocyanate following completion of quarrying. • To the health of farm workers coming into contact with soils containing elevated concentrations of lead and thiocyanate following restoration of fields upon completion of quarrying. • To potential ecological habitats as identified in the Phase 1 report. • From ground instability from disturbance of the untreated abandoned mine entry within the south eastern corner of the site during construction of the overburden storage mound.
Recommendations	• Stockpiling of the overburden soils from within the south western corner of the site (where elevated concentrations in lead and thiocyanate have been identified at one location) to be segregated at the southern end of the proposed screening mound with a visqueen membrane between the two to prevent intermixing and underlain by a layer of site sourced clay as a precautionary measure to mitigate potential leaching. The segregated stockpile to be returned to the same part of the site upon the completion of quarrying and during the final phases of restoration, but only following or during the conducting of a programme of soil testing in accordance with guidance that will be applicable at the time for the laying of clean cover soils. • At the time of preparing the ground for the storage of overburden within the area of the abandoned mine shaft (south eastern corner of the site), a search for the shaft should be undertaken by scraping the surface with excavation machinery, followed by capping of the shaft in accordance with Coal Authority requirements. • An ecological assessment of the site (as recommended in the Phase 1 report).

This Executive Summary should be read in conjunction with the entire report as it is only a brief account highlighting the key findings of the report.

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Soil Contamination Screening Assessment for Human Health

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Controlled Waters Screening Assessment

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Gas & Groundwater Monitoring Results

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REFERENCES

A *Land Contamination Risk Management*, Environment Agency (April 2021).
B *Guiding Principles for Land Contamination*, Environment Agency (March 2010).
C BS 5930:2020 *Code of Practice for Site Investigations*.
D BS 10175: 2017 *Investigation of potentially contaminated sites: Code of practice*.
E CIRIA C665:2007 *Assessing the risk posed by hazardous ground gases to buildings*.
F Town and Country Planning Act 1990.
G National Planning Policy Framework, 2018.
H Revised Statutory Guidance dated April 2012 implementing the contaminated land provisions under Part 2A of the Environmental Protection Act 1990.
I *Suitable 4 Use Levels (S4ULs) for human health risk assessment*, Land Quality Management Limited and the Chartered Institute of Environmental Health (CIEH), January 2015.
J *SP1010 - Development of category 4 screening levels for assessment of land affected by contamination. Final project report (Revision 2), CL:AIRE for Department for Environment, Food and Rural Affairs (DEFRA), 24th September 2014.*
K *Soil Generic Assessment Criteria for Human Health Risk Assessment*, Contaminated Land: Applications in Real Environments (CL:AIRE), January 2010.
L Technical Guidance WM3, *Guidance on the classification and assessment of waste*, UK environmental agencies, 1st edition v1.2.GB, October 2021.

1.0 INTRODUCTION

1.1 Brief

Silkstone Environmental Ltd (SEL) has prepared a Phase 2 (intrusive) Geo-Environmental Investigation Report for the site of Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, Huddersfield, HD8 8PD (the site) following receipt of a purchase order (PO ref. 4501784312) from Wavin Ltd (the Client) dated 11th September 2023.

The site is bounded to the north by Cumberworth Lane, to the west and south by the former Bromley Farm and Bromleys quarries and to the east by agricultural fields. The site comprises a group of six agricultural fields which slope down south eastwards towards East Hill Beck.

The site is identified as a Minerals Area of Search (MAS3) under the Kirklees Local Plan and this report has been prepared to fulfil the requirement for a contamination report under this allocation and the planning application submission.

The investigation has been completed to assess ground conditions for the proposed quarry extension for the extraction of brickshale and fireclay within the site and has been completed following previous reports prepared by SEL which should be read alongside this latest report:

- *Coal Mining Rick Assessment*, reference 22007/CMRA/0, dated 19th December 2022.
- *Phase 1 Preliminary Geo-Environmental Risk Assessment*, reference 22007/P1/0, dated 23rd January 2023.

Reference has also been made to gas monitoring records from wells established in three pre-existing 45.00m deep boreholes drilled in 2021 on behalf of the Client at locations adjoining the site.

The purpose of the investigation was to characterise ground conditions and assess the contamination status of the site and potential risks to quarry workers and other key receptors. The work included investigation fieldwork, chemical laboratory testing, a programme of gas monitoring and the preparation of this report.

1.2 Guidance and Information Sources

This report has been produced in line with relevant guidance and best practice. The ground investigation has been carried out in general accordance with the requirements of *Land Contamination Risk Management* (Ref. A), involving a tier 2 generic quantitative risk assessment. The investigation has also been carried out in general accordance with the '*Guiding Principles for Land Contamination*' (Ref. B), the recommendations of BS5930:(2020) *Code of Practice for Site Investigations* (Ref. C), BS10175:(2017) *Investigation of Potentially Contaminated Sites: Code of Practice* (Ref. D) and CIRIA C665:2007 *Assessing the risk posed by hazardous ground gases to buildings* (Ref. E).

If land proposed to be developed is suspected to be contaminated either historically or by its current use, an investigation may be requested by the Local Authority under the Town and Country Planning Act 1990 (Ref. F) and the National Planning Policy Framework (2018) (Ref. G) to determine the level of risk and if remediation is necessary or whether there may be grounds for the land to be considered contaminated under Part 2A of the Environmental Protection act 1990 (Ref. H). Under this regime investigations are carried out to determine if the current condition of the site is suitable for its proposed use.

1.3 Report Limitations

The comments and opinions expressed in this report are based on the ground conditions encountered at the specific locations during the fieldwork and on the results of measurements made in the field and in the laboratory. However, conditions may prevail which were not revealed by the investigation and which, therefore, could not be taken into account. In particular it should be noted that groundwater levels may vary due to seasonal or other effects such as boring, drilling and excavation processes.

The conclusions reached in this report are necessarily restricted to those which can be determined from available information and may be subject to amendment in the light of additional information becoming available or to changes in relevant legislation.

This report is strictly confidential to the party to whom it is addressed and may only be relied upon by that party or their other professional advisors, for the specific purpose to which it refers. Any third party using this report does so entirely at their own risk and SEL accepts no responsibility or liability for any costs, claims, damages or expenses (including consequential damages) as a result of this report or any part of its contents being used by any third party.

Except in connection with the specific purpose for which this report has been prepared, neither the whole nor any part of this report, nor any reference thereto, may be included in any published document, circular or statement, nor published in any way, nor disclosed orally to a third party, without the written approval from SEL of the form and context of such publication or disclosure. Such approval is required whether or not SEL are referred to by name and whether or not the report is combined with others.

SEL are unaware of any conflicts of interest in the preparation of this report.

2.0 ENVIRONMENTAL SETTING

2.1 Site Location

The site is located immediately south of Cumberworth Lane between Upper and Lower Cumberworth, approximately 12km south east of Huddersfield. The location of the site is shown on Figure 1 in Appendix A.

The National Grid Reference (NGR) for the centre of the site is 421716, 409084. The site is approximately 8.3ha in area and slopes to the south east from an approximate height of 232m Above Ordnance Datum (AOD) adjacent to Cumberworth Lane, to 213m AOD to the south east adjacent to East Hill Beck.

2.2 Historical Uses

The history of the site has been determined from the previous Phase 1 report which shows that the site existed as fields on land between Cumberworth Lane in the north and East Hill Beck in the south.

An 'Old Shaft' was identified on the 1906 map near the south eastern corner of the site, but is absent on all other map extracts. The 1983-85 and 1979-83 OS maps show activities associated with quarrying at the former Bromleys quarry which extended into the south western corner of the site (250m north east of Bromley Farm). This part of the site was subsequently recorded to have formed part of a landfill licensed to accept inert, industrial, commercial and household waste between 1982 and 1990.

Other uses identified within 250m of the site have included multiple old shafts/adits, coal pits and coal mining, claypits, unspecified pits, brickshale/fireclay, brickworks, unspecified heaps, sandstone quarries and unspecified works/ground workings.

2.3 Current Site Condition

At the time of the Phase 2 investigation the site appeared largely unchanged since the site walkover completed for the Phase 1 report in December 2022. At that time the site was described to comprise of grassed fields sloping to the south/south east, towards East Hill Beck and a hedgerow with semi-mature and mature trees screening the site from Lower Cumberworth. At the time of the investigation the larger fields contained abandoned vegetable crops that were overgrown with weeds and the small field in the south western corner was grassland.

2.4 Geology

The anticipated geology of the location based on the previous Phase 1 and Coal Mining Risk Assessment reports is summarised in Table 1.

Anticipated Geology

Artificial Ground	Worked ground (Bromley Farm quarry) immediately west/south west of site. Infilled ground (Bromley's quarry) on site (SW corner) and immediately south of the site.
Superficial Deposits	Topsoil overlaying 0.60m of boulder clay on site to a depth of 1.10m. No landslips recorded adjacent to site.
Solid Geology (Bedrock)	**Pennine Lower Coal Measures Formation**: mudstones and siltstones with occasional thicker sandstones, lying stratigraphically between the Cumberworth Thick (or Whinmoor) coal seam roof strata and the Cumberworth Thin seam.
Dip of Solid Strata	Mainly 1-2° dip to the northeast, 5° to the north at the northern end of the site (based on mining records).
Faults	ENE/WSW trending fault crossing northern part of the site (<5m throw).
Coal Seams / Mining / Quarrying	Site within a Coal Authority designated Development High Risk Area in terms of coal mining legacy risk and affected by recorded shallow mine workings in Cumberworth Thick and Cumberworth Thin coal seams and potentially unrecorded shallow mine workings. A mine entry (shaft) is recorded on site (recorded as untreated) with other mine entries adjacent to the site. Potential for unrecorded mine entries. Bromley Farm clay/brickshale workings (W) and Bromleys clay/brickshale quarry (S/SE) adjacent to site, both now infilled. No surface mining activities on site.

2.5 Hydrogeology

Key features determined from the Phase 1 report are outlined as follows:

- The bedrock geology is designated as a Secondary (A) aquifer and groundwater in the bedrock aquifer has a medium to high vulnerability to potential contamination with a flow mechanism of well-connected fractures.
- Bedrock is overlain by soils of variable (low to high) leaching class.
- The chemical quality of groundwater regionally has been classified as 'Poor'.
- There are no groundwater Source Protection Zones relating to abstractions for public water supply within 500m of the site.
- There are six active Environment Agency (EA) licensed groundwater abstractions within 2km of the site, the nearest being for transfer between sources located 690m to the south east. Four of the abstractions are also recorded to be for potable (drinking) use and relate to water bottling by Penmoor UK Ltd, the nearest being 1405m north west.
- The sensitivity of groundwater as a receptor to any potential contamination at this location was considered to be of moderate significance because of the medium to high vulnerability of bedrock groundwater, the variable leaching potential of overlaying soils and the presence of four licensed groundwater abstractions for drinking water supply within 2km, although the nearest is 1.405km to the west.

2.6 Hydrology

Key features determined from the Phase 1 report are outlined as follows:

- The nearest surface water feature to the site is East Hill Beck flowing along the central section of the southern site boundary in an easterly direction to a large pond located approximately 60m to the south of the site. The outfall from the pond flows in an easterly direction joining the River Dearne approximately 895m south east.

- The site straddles the boundary of two surface water catchments. Most of the site is located within the Dearne operational catchment of the Don and Rother management area and the northernmost part of the site is located in the Colney and Holme operational catchment of the Aire and Calder management area. Both main watercourses within these catchments have a moderate ecological classification and fail chemical classification (for 2019).
- There are three active EA licensed surface water abstractions recorded within 2km of the site, the nearest of which is for non-evaporative cooling at a location 681m to the south east. There are no potable surface water abstractions licensed by the EA within 2km of the site.
- There are no EA recorded pollution incidents within 250m of the site which have had an impact on water.
- There are no active EA licensed discharge consents to controlled within 250m of the site.
- There are two non-active discharges for List 1 and two non-active discharges to List 2 dangerous substances regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015 within 250m of the site. These were releases from Bromley Farm Landfill with the nearest being for the release of mercury and cadmium into the Dearne / Don 92m to the south (List 1) and iron into the Dearne 119m to the south (List 2).
- The level of sensitivity of surface water resources to any potential contamination that may arise from the site as a result of the proposals was considered to be reasonably significant due to the gradient of the site falling towards East Hill Beck which adjoins the central section of the southern site boundary and flows across the location of the recorded historic landfill.

2.7 Ecology

The following potential ecological receptors were identified within the surrounding area from the Phase 1 report:

- Areas of Priority Habitat deciduous woodland adjoining the site to the south[1], 32m south east, 121m east and 241m north.
- A Network Enhancement Zone 1 Habitat Network 221m south west.
- Areas of ancient replanted woodland 498m east, 617-735m south and 698m south west.

2.8 Property Receptors

Property receptors to any potential harm that may arise from the site proposals identified in the Phase 1 report included the following:

- The existing agricultural fields on site and within the surrounding area;
- Isolated residential dwellings / farms, the nearest being Lane Side Farm adjoining Cumberworth Lane to the west, small groups of residential dwellings along Cumberworth Lane 292m south west and on the edge of Lower Cumberworth approximately 257m east and 187m south east; and
- Local road infrastructure and utilities.

[1] The environmental data report appended to the Phase 1 report mistakenly states this to be located on site.

2.9 Ground Gas

The Phase 1 report identified a requirement for the monitoring of ground gas (principally methane and carbon dioxide) due to the presence of the following potential gas generating sources within 250m of the site:

- Historic licensed landfill for inert, industrial, commercial and household waste recorded on site (south western corner) and adjoining the site to the south and south west (also collectively referred to as refuse tip / spoil heap);
- Shallow recorded mine workings (on site and surrounding areas);
- A recorded mine entry on site (southeastern corner) and others within the surrounding area;
- Former clay/unspecified pits (8-13m east, 5-60m north and 85-87m north);
- Infilled clay pits (western and southern boundaries).

The Phase 1 report identified the northernmost part of the site to be located within a Radon Affected Area. This is because the highest radon potential within the one kilometre grid square in in which this part of the site is located (determined by the percentage of homes above the radon action level) is 1-3%. In accordance with current UK guidance no radon protection measures are required for new buildings where the level of risk from radon is <3%.

3.0 GROUND INVESTIGATION

3.1 Objectives

The objectives of the recent Investigation were as follows:

- To confirm the outputs from the Phase 1 report by investigating the potential presence of contamination and ground gas and likely pathways for contamination and ground gas to reach receptors;
- To characterise ground conditions, obtain soil and water samples for a generic assessment of soil and groundwater contamination and complete a ground gas risk assessment.
- To refine the conceptual site model and environmental risk assessment presented in the Phase 1 report, as appropriate; and
- To make recommendations for any remediation or further work.

3.2 Scope of Investigation

The investigation was completed on 21st September 2023 and involved the following:

- 5 no. window (also known as dynamic or windowless) sampling boreholes (WS01-WS05) to depths of between 1.00m and 2.80m below existing ground level (begl) with follow-on dynamic probing at 2 no. locations to confirm the presence of bedrock;
- The establishment of combination gas and groundwater monitoring installations at three of the locations to enable a monitoring programme to be initiated at approximately two-weekly intervals until the completion of 6 no. visits;
- Soil sampling at appropriate depth horizons for contamination testing to enable assessment of the potential human health risk; and
- Subsequent sampling of surface water from East Hill Beck and the pond into which the beck flows to the south of the site and onsite perched groundwater to assess the risk to controlled waters.

The investigation locations are identified on the exploration hole location plan presented as Figure 2 in Appendix A. The rationale for the location of the exploratory holes is provided in Table 2 (next page).

3.3 Ground Investigation Methodology

The investigation was supervised on site by a suitably qualified and experienced SEL Engineer with all exploratory holes logged and sampled in accordance with BS5930:2020 (Ref. C). The exploratory hole logs are provided in Appendix B and a photographic record from the investigation fieldwork is provided in Appendix C.

Prior to commencement, each exploratory hole location was cleared using a Cable Avoidance Tool (CAT) prior to breaking ground. All locations were also initiated with a hand dug inspection pit as a further precaution prior to the use of mechanical plant.

Excavation of the hand dug inspection pits proceeded using a post hole digger and spade with the excavated soils being placed on plastic sheeting for recording and sampling.

Table 2: Ground Investigation Rationale

Hole ID	Position	Targeted Location	Objectives	Elements Completed		
				Soil Sampling	Gas Monitoring Standpipe	Groundwater Sampling
WS01	South western corner within a semi-enclosed grass surfaced field (believed to be part of recorded historic landfill).	Y	To assess chemical properties of shallow soils and potential groundwater and ground gas risk.	Y	Y	Y
WS02	South western corner within a semi-enclosed grass surfaced field (believed to be part of recorded historic landfill).	Y		Y	Y	
WS02A	Within interior of field several metres from WS02 to determine if thickness of Made Ground increases.	Y	To assess chemical properties of shallow soils.			
WS03	On the southern site boundary within an overgrown field.	N		Y		
WS04	Central location within an overgrown agricultural field with old crop still evident.	N	To assess chemical properties of shallow soils and potential groundwater and ground gas risk.	Y	Y	
WS05	Northern part of the site in an overgrown agricultural field with old crop still evident.	N	To assess chemical properties of shallow soils.	Y		

WS = Window sampling location.

The boreholes were advanced by dynamic sampling (sometimes referred to as window sampling) using an Archway Competitor tracked rig in which the soils are recovered from the ground in 1.00m long sample tubes fitted with a plastic sample liner to prevent cross contamination between samples.

Standard Penetration Testing (SPTs) was carried out during window sampling at 1.00m intervals or from the base of the inspection pits to provide information on soil strength and determine the depth to bedrock. Dynamic probing was also completed at locations within the area of the recorded historic landfill (WS01, WS02 & WS02A) following on from the window sampling to confirm the depth to bedrock.

Small disturbed soil samples for contamination testing were collected from the recovered soils at each location and placed in appropriate sealed containers provided by the analytical laboratory. These included samples of Made Ground and natural soils.

Soil samples to be analysed for organic compounds (such as petroleum hydrocarbons) were placed in amber glass jars and stored in cool boxes with ice packs and later refrigerated prior to dispatch to the chemical laboratory. All samples were collected using appropriate sampling equipment that was cleaned between each sampling location.

Upon completion of the fieldwork, monitoring wells had been established at three window sampling locations with lockable cast iron metal covers set in concrete and flush with the surface.

Exploration holes without monitoring wells (WS02A, WS03 & WS05) were backfilled with soil arisings in approximately the same order that they were excavated, with any shortfall as a result of soil sampling being made up with clean gravel.

Following the initial fieldwork, samples of surface water were collected from East Hill Beck at a point on the southern site boundary (SW02) and from the pond located a short distance to the south of the site into which the beck flows (SW01). The samples were collected during the first monitoring visit on 26th September 2023 using a telescopic sampler. At the time of sampling there was no continuous flow within the beck and the sample was collected from the ponding of water within the channel bed (see Figure 2 in Appendix A and Photo 18 in Appendix C). The sample of water from the pond was collected from an approximate depth of 0.30m.

Sampling of perched groundwater was completed from one location (WS01) eleven days after the monitoring wells were established during the second monitoring visit using a polyethylene baler and following purging of water from the well during the first visit six days previously[2] (see Photo 19 in Appendix C). At this time the other two wells were either dry or produced insufficient water to enable water samples to be taken.

All water samples were decanted into laboratory supplied sample bottles and stored in insulated cool boxes with freezer packs and later refrigerated prior to dispatch to the chemical laboratory.

3.4 Laboratory Testing

Soil and water samples were submitted to a UKAS and MCERTS accredited laboratory, Derwentside Environmental Testing Ltd (part of the SUEZ Group). All tests were scheduled by SEL in accordance with the encountered ground conditions and submitted for testing for the following (Table 3).

Table 3: Chemical Analysis Suite

Analytical Parameters		Soils	Waters
pH (acidity/alkalinity)		12	3
Metals / metalloids (arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc)		12	3
Hexavalent chromium		12	
Cyanide (total), thiocyanate		6	3
Sulphate (2:1 water soluble) as SO4		12	
Total sulphate as SO4		12	3
Sulphide		6	3
Total and speciated polyaromatic hydrocarbons (PAHs)		12	3
Total petroleum hydrocarbons (TPHs) CWG aliphatic / aromatic split		7	3
Benzene, toluene, ethylbenzene, xylenes (BTEX) & MTBE		7	3
Monohydric phenol		6	3
Polychlorinated biphenyls (WHO 12)		2	3
Organochlorine and organophosphate pesticides		2	3
Volatile and semi-volatile organic compounds (VOCs & SVOCs)		2	3
Ammoniacal nitrogen	Landfill leachate indicators		3
Chloride			3
Electrical conductivity	Landfill marker indicators		3
Biochemical oxygen demand			3
Soil organic matter (SOM)		12	
Asbestos screen & ID (stage 1)		7	

[2] Only two litres of water could be purged from the well during the first monitoring visit before the well went dry.

The certified chemical laboratory results are presented in Appendix D of this report and discussed in Section 5.

4.0 ENCOUNTERED GROUND CONDITIONS

4.1 General

The ground and groundwater conditions encountered are described in detail on each of the exploratory hole logs and summarised below. The logs for each location are presented in Appendix B and a photographic record of the soils encountered is provided in Appendix C.

4.2 Made Ground

Made Ground was encountered at all exploratory hole locations where it was proven to its full depth ranging between 0.31 and 1.00m begl. The Made Ground is deepest within the area of the recorded historic landfill where it extended to depths of between 0.85 and 1.00m begl. Within this area it comprises a brown slightly gravelly silty topsoil to depths of 0.20-0.30m begl in which the gravels comprise sandstone and occasional brick and indescript pebbles. This overlies a brown to dark brown gravelly slightly clayey silt in which the gravel component includes sandstone and occasional brick.

Elsewhere across the site, the Made Ground is generally thinner, extending to depths of between 0.31 and 0.47m begl. It comprises a brown to dark brown gravelly silty topsoil in which the gravel component comprises sandstone. Occasional cobbles of sandstone were also recorded at one location.

4.3 Natural Ground

Below the Made Ground, the natural soils were encountered at three of the window sampling locations (WS01, WS02/WS02A and WS04) and extended down to a highly weathered to weathered siltstone or a weathered sandstone or coal.

The natural soils comprised mostly cohesive soils of clay, gravelly silty clay and clayey silt with a smaller proportion of granular coal. They extended to depths of 1.10-1.35m begl within the area of the recorded historic landfill and 0.00-2.30m begl elsewhere across the site.

Within the area of the recorded historic landfill, bedrock was encountered as thin weathered sandstone at 1.95m in WS01 overlying weathered siltstone from 2.00m, in which dynamic probing proved engineering rockhead at 2.8m begl. At WS02/02A the bedrock was encountered as a highly weathered siltstone at 1.20-1.35m begl, with engineering rockhead proven by dynamic probing at 1.20-1.50m begl.

Elsewhere across the site, bedrock was encountered as a whitish yellow weathered sandstone from 0.40m begl at WS03, a thin (0.10m) coal band at 2.30m begl overlying weathered siltstone at WS04 and as a brownish orange weathered sandstone at 0.47m begl at WS05.

4.4 Groundwater

Groundwater was not encountered on the day of the investigation, but during the subsequent monitoring programme groundwater was recorded in all three monitoring wells at depths ranging between 0.64 and 2.67m begl.

Groundwater was recorded during all monitoring visits from WS01, with levels ranging between 1.17 and 1.99m begl (head of water ranging between 0.59 and 1.44m). Groundwater was also recorded on five occasions at WS02 at 0.64-1.10m begl (head of water ranging between 0.04 and 0.52m) and on four occasions at WS04 at 1.12-2.67m begl (head of water ranging between 0.05 and 1.65m).

It is considered that the recorded groundwater is perched within the shallow soils above the bedrock.

The groundwater monitoring records are provided in Appendix G.

4.5 Visual and Olfactory Evidence of Contamination

No obvious visual or olfactory signs of significant potential contamination (such as hydrocarbon sheen and odours) were observed during the investigation from the recovered soils or surface and groundwaters and no materials suspected of containing asbestos were noted in soils.

Furthermore, no putrescible or other materials consistent with what one would reasonably expect to encounter within inert, industrial, commercial or household waste was observed within the area of the site which is recorded to have formed part of the historic landfill.

5.0 CONTAMINATION ASSESSMENT

5.1 Assessment Criteria for Soils

A generic quantitative risk assessment (GQRA) for human health has been undertaken in which the chemical testing results for soils have been assessed against generic assessment criteria (GAC), also known as Soil Screening Values, with reference values obtained from the following:

1. Suitable 4 Use Levels (S4ULs) for human health risk assessment (Ref. I). This specifies S4ULs for a range of common contaminants above which the concentrations could pose an unacceptable risk to the health of site users which may warrant further investigation or remediation. S4ULs are specified for 6 categories of land use (residential with and without homegrown produce, allotments, commercial, public open space near residential housing and public parks).
2. Category 4 Screening Levels (C4SLs) (Ref. J). These were issued for a small number of substances to determine if a site is suitable for a proposed use and if such a site may be deemed to be contaminated in accordance with Part 2A of the Environmental Protection Act 1990. The C4SLs are specified for the same 6 categories of land use listed under 1 (above).
3. Soil Generic Assessment Criteria (GAC) for Human Health Risk Assessment (Ref. K). GACs are specified for 4 categories of land use (residential with and without homegrown produce, allotments and commercial).

For the purposes of this assessment the analytical results on the soil samples have been compared against the values for allotment use, reflecting the existing use of the site as agricultural land (the majority of the site was observed to be arable farmland). This will also be the anticipated end use upon restoration of the land following completion of quarrying activities when the same surface soils (overburden) that will be stockpiled for the life of the quarry will be returned and the key receptors will be farm workers and consumers of arable crops.

With regard to cyanide, thiocyanate and polychlorinated biphenyls (PCBs), which are not covered in the above assessment criteria, reference has been made to the United States Environmental Protection Agency (USEPA) Regional Screening Levels for resident soil (May 2023).

For the assessment of organic compounds (polyaromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs)), assessment values relevant to a soil organic matter (SOM) content of 6% have been used based on the average SOM value determined from across the area investigated of 7.9%.

A conceptual (source-pathway-receptor) model is required for the site in order to establish a risk. In this instance, the model would simply consist of any contamination (the ‘source’) in the ground passing via a ‘pathway’ (direct contact, or by plant uptake from a derivative soil) to reach a ‘receptor’ (site operative, resident / visitor, controlled waters, ecological or property).

This risk assessment considers the 'source' term initially. Where the source term is not considered to present a significant risk following the GQRA, then no further modelling is required.

5.2 Assessment of Results on Soils

The chemical laboratory results are provided in Appendix D and the soil contamination screening assessment for human health is provided in Appendix E with any exceedances above the soil screening values (SSVs) highlighted. This has identified the following:

- A single elevated concentration above the SSV in lead within the Made Ground at a depth of 0.70-1.00m begl at WS01. The concentration determined was 130mg/kg compared to the SSV of 80mg/kg. The two samples above this depth and the one sample of natural soil below at the same location were well below the SSV for lead.
- A single elevated concentration above the SSV in thiocyanate from the natural soil at a depth of 1.00-1.80m begl at WS01. The concentration determined was 82mg/kg compared to the SSV of 16mg/kg. The two samples from above this depth (Made Ground) at the same location were well below the SSV for thiocyanate.

The contaminants identified above were at one location (WS01) within the area of the site recorded to have formed part of an historic landfill extending beyond the site to the south.

No asbestos fibres in the soils have been detected in any of the soils tested.

Seven soil samples were analysed for petroleum hydrocarbons (TPHs) and benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tert-butyl ether (MTBE) and the concentrations determined were all below the limits of detection.

Twelve soil samples were analysed for polyaromatic hydrocarbons (PAHs) and only very slight elevations were determined in a small number of compounds with the majority of concentrations in all PAH compounds being below the limits of detection.

Two samples from the Made Ground with the area forming part of the recorded historic landfill were analysed for PCBs, pesticides and volatile and semi-volatile organic compounds and the concentrations determined were all below the limits of detection.

Soil pH ranged from pH4.2 (extremely acidic) to pH7.2 (neutral) with an average of pH5.4 from across the investigation area, indicative of strongly acidic soil conditions. The most acidic soils were identified within the area of the historic landfill (within both natural soils and Made Ground) and within the natural soils across the remaining area of the site. The topsoil outside the area of the historic landfill was very much less acidic, being slightly acidic to neutral.

Acidic soil conditions make the soils susceptible to the leaching of any contaminants they may contain into groundwater and therefore leachate testing on the samples elevated in lead and thiocyanate was completed (see Section 6.1).

6.0 CONTROLLED WATERS SCREENING ASSESSMENT

6.1 Analytical Parameters

The screening assessment for controlled waters has been completed following the sampling and chemical analysis of two surface water samples (SW01 and SW02) and one sample of perched groundwater sample (WS01).

The soil samples in which the elevated concentrations in lead and thiocyanate were determined above their respective SSVs at WS01 were also subjected to soil leachate testing[3] to determine the propensity for lead and thiocyanate from WS01 to leach into groundwater.

The surface water samples were taken from East Hill Beck at a point adjoining the site to the south and adjoining that part of the recorded historic landfill located outside the site (SW02) and the pond located off site approximately 60m to the south into which East Hill Beck flows (SW01) and downstream from SW02. The water samples were analysed for the suite of determinands listed in Table 3.

6.2 Assessment Criteria

A GQRA has been undertaken in which the chemical laboratory results from the water and soil leachate testing have been assessed against health or environmental 'screening' criteria, termed Generic Assessment Criteria (GAC) selected from the following published guidance:

- Water Supply (Water Quality) Regulations 2018 (UK drinking water standards);
- Surface Waters (Abstraction for Drinking Water) (Classification) Regs 1996;
- Maximum Allowable Concentrations (MAC) under the Environmental Quality Standards (EQS) for inland surface waters;
- Annual Average (AA) concentrations under the EQS for inland surface waters;
- WHO Guidelines for Drinking Water Quality, 2008;
- Drinking Water Directive;
- Surface Water Directive
- USEPA Regional Screening Levels for tapwater, May 2023;
- Drinking Water Inspectorate, London, 2006.

6.3 Assessment of Results

The chemical laboratory results on the water and soil leachate testing are included in Appendix D and the screening assessment is provided in Appendix F, with any exceedances highlighted.

This has identified an elevated concentration in excess of the GAC for monohydric phenol in the sample from the pond (SW01). A concentration of 0.0095mg/l was determined compared to the GAC of 0.0077mg/l. The exceedance above the GAC was therefore of a low order of magnitude.

[3] Soil leachate testing conducted in accordance with BS EN 12457-2 (10:1).

An elevated concentration in ammoniacal nitrogen was also determined to be in excess of its GAC in the groundwater sample from WS01. The concentration determined was 2.8mg/l compared with the GAC of 0.5mg/l. Whilst the concentration determined was nearly five times the GAC, the GAC is based on a drinking water standard and is therefore highly conservative. Furthermore, the elevated concentration in ammoniacal nitrogen at WS01 is not manifesting in East Hill Beck or in the nearby pond.

Since the area in which the site is located is predominantly agricultural, it is possible that the elevated concentration of ammoniacal nitrogen in perched groundwater may be derived from leaching following muck spreading within the area generally.

The pH of the groundwater from WS01 was also found to be strongly acidic with a pH of pH5.2. Whilst this is outside the desired range of pH6.5-10, this is a drinking water standard and is therefore only a guide. The groundwater pH determined at WS01 is also similar to the soil pH at the same location and is consistent with soil pH values that have been determined from the natural soils across the site. The acidic groundwater at WS01 is not manifesting in East Hill Beck or in the nearby pond where pH levels are neutral.

The concentration in phenanthrene (a PAH compound) was noted to be slightly elevated in the groundwater sample (WS01). Whilst there is no GAC for phenanthrene, it is listed as having a low overall relative mobility in groundwater[4].

It has been noted that the GAC for methylene chloride (a VOC) is below the limit of detection for the analysis conducted, thereby possibly concealing elevated concentrations. However, the GAC for methylene chloride is a drinking water standard and is therefore overly conservative. Furthermore, the concentrations in all other VOCs which were tested with much lower detection limits, were all below the limits of detection.

In terms of the potential for leaching of the elevated concentrations in lead and thiocyanate from the soil at WS01 into the perched groundwater, lead has not been found to be potentially leachable at a concentration above the GAC for lead and thiocyanate has not been found to be leachable at a concentration above the detection limit.

[4] *Petroleum hydrocarbons in groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies*, CL:AIRE, 2017.

7.0 GROUND GAS RISK ASSESSMENT

7.1 Gas Monitoring Programme

A programme of gas monitoring involving visits approximately every two weeks over a three month period (equating to six visits in total) has been completed from standpipe installations established at three window sampling locations (WS01 and WS02 within the area recorded to have been part of an historic landfill and WS04). The wells extended to recorded average depths of 2.61m (WS01), 1.14m (WS02) and 2.74m (WS04).

7.2 Gas Monitoring Results

The results of the monitoring are provided in Appendix G and show that concentrations in carbon dioxide were detected ranging between 0.3 and 6.1% by volume in air (v/v). Low concentrations of methane were detected ranging from below the limit of detection (<0.1% v/v) to 0.2% v/v (4% of the lower explosive Limit).

Concentrations in carbon monoxide and hydrogen sulphide remained below the limits of detection on all occasions.

Slightly depleted levels of oxygen have been recorded at all three locations, with concentrations reaching a minimum of 14.1% v/v at WS01, 18.1% v/v at WS02 and 12.5% v/v at WS04.

Borehole flow rates have ranged from below the limit of detection (<0.1 l/hr) to 0.4 l/hr.

Atmospheric pressure during the monitoring visits has ranged between 971 and 993 millibars (mb) with optimal monitoring conditions (corresponding to a low and falling atmospheric pressure) to cover a ‘worst case’ scenario, being prevalent on the following occasions:

- Visit 1 – Low atmospheric pressure of 984mb with falling pressure trend;
- Visit 2 – Low atmospheric pressure of 993mb with falling pressure trend;
- Visit 6 – Low atmospheric pressure of 971mb with falling pressure trend.

7.3 Assessment of Results

The gas monitoring results have been assessed in accordance with CIRIA Report C665 (Ref. E) by determining the Gas Screening Values (GSVs). These are calculated by multiplying the maximum gas concentrations with maximum recorded borehole gas flow. On this basis the GSV for methane has been calculated to be (0.2/100 x 0.4) 0.0008 l/hr and the GSV for carbon dioxide has been calculated to be (6.1/100 x 0.4) 0.0244 l/hr.

No built development is proposed on site, but for the purposes of this assessment the site is considered to fall within Situation A[5] under CIRIA C665 and therefore the GSVs have been assessed against the Modified Wilson and Card Classification which is reproduced as Table 4.

Table 4: Modified Wilson and Card Classification (from Table 8.5 of CIRIA C665)

Characteristic Situation (CIRIA Report 149)	Risk Classification	GSV (CH_4 or CO_2) (l/hr)[1]	Additional Factors	Typical Source of Generation
1	Very low risk	<0.07	Typically methane ≤1%v/v and /or carbon dioxide ≤5%v/v. Otherwise consider increase to Situation 2.	Natural soils with low organic content. "Typical" Made Ground
2	Low risk	<0.7	Borehole flow rate not to exceed 70 l/hr. Otherwise consider Situation 3.	Natural soil, high peat/organic content. "Typical" Made Ground
3	Moderate risk	<3.5		Old landfill, inert waste, mineworking flooded
4	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking susceptible to flooding, completed landfill (WMP 26B criteria)
5	High Risk	<70		Mineworking unflooded, inactive with shallow workings near surface
6	Very high risk	>70		Recent landfill site

Notes:

1. Gas screening value: litres of gas/hour is calculated by multiplying the gas concentration (%) by the measured borehole flow rate (l/hr);
2. Site characterization should be based on gas monitoring of concentrations and borehole flow rates for the minimum periods as defined within CIRIA Report 659;
3. Source of gas and generation potential/performance must be identified;
4. Soil gas investigation to be in accordance with guidance contained within CIRIA Report 659;
5. If there is no detectable flow, use the limit of detection of the instrument;
6. The boundaries between the Partners in Technology classifications do not fit exactly with the boundaries for the above classification.

This shows that the calculated GSVs for both methane and carbon dioxide equate to Characteristic Situation (CS) 1 (Very low risk). However, the 5% v/v limit for typical carbon dioxide concentrations was exceeded on one occasion which means that the risk increases to CS2 (Low risk).

7.4 Pre Existing Gas Monitoring

Gas monitoring records from wells established in three pre-existing 45.00m deep boreholes drilled in 2021 have been reviewed. The boreholes (BH01, BH02 and BH03) were drilled at locations on the south western and north eastern site boundaries (see Figure 2 in Appendix A. The slotted section of the wells extended to the full depth of the boreholes which extended through mudstones, occasional sandstone beds and occasional thin coal seams.

[5] CIRIA C665 specifies two categories of development with separate classifications for assessing gas risk; these being Situation A (for types of development other than that falling within the definition of situation B, such as factories, shops, commercial uses, warehouses, schools, cinemas, sports centres, stadiums, high rise housing, housing with basements etc) and situation B applicable to low rise housing with a ventilated underfloor void of a minimum 150mm.

The gas monitoring data comprises eight sets of readings taken between July 2021 and September 2023 and all conducted during periods of low atmospheric pressure (977-1001mb).

The results from the monitoring show that carbon dioxide concentrations ranged between 0.1 and 8.5% v/v and methane between <0.1 and 0.7% v/v.

Very slight elevated concentrations in carbon monoxide were occasionally detected in two of the wells ranging between 1 and 6ppm, but concentrations in hydrogen sulphide remained below the limit of detection.

Depleted levels of oxygen were recorded from all three wells on various occasions with concentrations reaching a minimum of 1.1% v/v at BH01, 1.3% v/v at BH02 and 8.4% v/v at BH03.

Borehole flow rates ranged from -0.1 l/hr (indicating a very slight suction) to 2.0 l/hr.

These results have been assessed in the same way as the results from the wells recently established in the shallow soils by determining the GSVs. The GSV for methane has been calculated to be (0.7/100 x 2) 0.014 l/hr and the GSV for carbon dioxide has been calculated to be (8.5/100 x 2) 0.17 l/hr.

Assessment of the GSVs against the Modified Wilson and Card Classification (Table 4) shows that the calculated GSV and typical maximum gas concentration for methane equates to CS 1 (Very low risk) and the calculated GSV and typical maximum gas concentration for carbon dioxide equates to CS 2 (Low risk).

7.5 Ground Gas Migration Pathways and Receptors

The Phase 1 report identified several potential gas generating sources within 250m of the site, the most significant of which is the historic licensed landfill for inert, industrial, commercial and household waste recorded on site (south western corner, but for which little evidence was encountered during the investigation) and adjoining the site to the south and south west.

The potential pathways representing the routes by which gas may migrate are listed as follows:

- Vertical upward migration as surface emissions;
- Lateral migration from the source points into surrounding ground;
- Wind following surface emissions;
- Ingress into surrounding buildings and inhalation by occupants.

The key on-site receptors will be quarry workers, contractors and visitors, but since no built development is proposed on site and workers will be working outdoors, the level of risk has been assessed to be very low.

Off-site receptors to gas emissions have been identified to be pedestrians, neighbouring occupants and neighbouring properties. The nearest neighbouring receptors within 250m have been identified as follows:

- Lane Side Farm (78m SW);
- Cricket ground pavilion (190m NE);
- Residential housing – Blue Hills Lane (190m SE);
- Bromley Farm Recycling Centre (100m S).

The void created by the proposed quarry extension will offer a path of least resistance for migrating gases within the surrounding area which will then be able to vent to atmosphere. The risk to pedestrians, neighbouring occupants and neighbouring properties has therefore been assessed to be low. Upon completion of quarrying and following restoration of the site to agriculture by backfilling with inert soil materials, the risk will continue to be low.

8.0 REFINED CONCEPTUAL SITE MODEL & ENVIRONMENTAL RISK ASSESSMENT

8.1 Refined Conceptual Site Model

The Preliminary Conceptual Site Model (CSM) provided in the January 2023 Phase 1 report has been revised following completion of the Phase 2 investigation and is presented below.

Table 5: Refined Conceptual Site Model

Potential Pollutant (Source)	Potential Linkage (Pathway)	Receptor
On Site: Recorded/unrecorded shallow mine workings. Recorded/unrecorded mine entries. Unlicensed coal / brickshale opencast working (part of SW corner). Recorded historic inert, industrial, commercial, household landfill (SW corner – no evidence of waste fill found). Refuse / spoil heap (SW corner). Past agricultural practices. **Soil Contaminants:** – Lead in MG (WS01); – Thiocyanate in natural (WS01). **Water Contaminants:** – Ammoniacal nitrogen in GW (WS01); – Acidic pH in GW (WS01). ***Off Site***: Infilled /worked ground - unlicensed coal / brickshale opencast working (W&S perimeter). Refuse tip (adj. SW). Historic landfill (adj. SW, 24m SW, 111m S, 141m S). Former clay/unspecified pits (8-13m E & 5-60m N). Railway sidings & tunnel (70m SE & 95-99m E). List 1& List 2 Dangerous Substance authorisations (92m E, 119m S, 137m S). Household waste recycling centre (139m S). Quarries (176m SW, 229m SE). Recorded/unrecorded shallow mine workings. Recorded/unrecorded mine entries. **Water Contaminants:** – Low level mono. phenol in nearby pond.	Emission, migration and inhalation of gases / vapours. Inhalation of soil, water or dust. Dermal contact with / ingestion of contaminated soil, water, dust. Migration / leaching, runoff and percolation through soils and rock joints. Volatisation of contaminants to indoor or outdoor air. Service pipes. Physical disturbance and migration of contaminated soil and dust via wind. Ground instability / differential settlement.	Quarry workers (and visitors). Consumers of field crops upon restoration of quarry. Farm workers crops upon restoration of quarry. Transient public (pedestrians on footpath alongside Cumberworth Road & public footpath 42m NE). Neighbouring occupants (residents and farm workers). Groundwater in Secondary A Aquifer. Surface watercourse (S perimeter). Ecology (Ancient Replanted Woodland, Priority Habitat sites, Habitat Network & Green Belt). Property (existing fields, surrounding residential properties, road infrastructure).

8.2 Revised Environmental Risk Assessment

This section aims to expand the CSM to assess the level of risk for each potential pollutant linkage following completion of the investigation and the updated assessment is provided in Table 6 (next page).

Table 6: Revised Environmental Risk Assessment

Receptor	Potential Pollutant Linkage	Estimated Degree of Risk to Receptor
Site Occupants (Quarry workers, contractors, visitors)	Migration and inhalation of ground gas (methane & carbon dioxide).	Very Low
	Migration and inhalation of radon gas.	Low
	Inhalation of soil, water or dust.	Low *
	Dermal contact with / ingestion of contaminated soil / water / dust.	Low *
	Volatisation of contaminants to indoor or outdoor air.	Very Low
	Physical disturbance (unexploded WWII UXO).	Low
	Physical disturbance / ground instability (unrecorded mine entries).	Low
Consumers of Field Crops (Upon restoration of quarry with stockpiled soils)	Dermal contact with / ingestion of soil contaminated with lead and thiocyanate adhered to crops and / or consumption of crops (soils from south western field only).	Low/Moderate
Farm Workers (Upon restoration of quarry with stockpiled soils)	Dermal contact with / ingestion of soil contaminated with lead and thiocyanate.	Low/Moderate
Pedestrians (Transient public within surrounding area)	Migration and inhalation of ground gas (methane & carbon dioxide).	Very Low
	Migration of airborne particles and inhalation (of soil or dust).	Low**
	Migration of airborne particles and dermal contact (with soil or dust).	Low**
Neighbouring Occupants	Migration and inhalation of ground gas (methane & carbon dioxide).	Low
	Migration / leaching / runoff.	Low**
	Inhalation of soil, water or dust.	Low**
	Dermal contact with/ingestion of contaminated soil/water/dust.	Low**
Surface Water	Migration / leaching / runoff.	Low **
Groundwater	Migration / leaching / runoff.	Low**
Ecological Systems	Migration / leaching / runoff / wind (dust).	Low/Moderate**
Property (Land & Buildings)	Migration, accumulation and ignition of methane.	Very Low
	Migration / leaching / runoff.	Low**
	Ground instability / differential settlement (recorded shallow coal mining)	Low/Moderate

* Assumes basic PPE is used (including gloves and long-sleeved overalls).

** Assumes good site construction practice, including, relevant reports, control of runoff / spillages and dust control.

In this risk assessment, an overall **Very Low to Moderate** risk is applicable following completion of the intrusive site investigation.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Overview

Based on the proposed quarry extension for the extraction of brickshale and fireclay within the site, it is considered that the site presents an overall **Very Low to Moderate** geo-environmental risk. The main risks relate to the following:

- To the health of consumers of crops grown in the fields restored with soil originating from the south western corner of the site containing elevated concentrations of lead and thiocyanate following completion of quarrying.
- To the health of farm workers coming into contact with soils originating from the south western corner of the site containing elevated concentrations of lead and thiocyanate following restoration of fields upon completion of quarrying.
- To potential ecological habitats extending across the site and along sections of East Hill Beck and the Priority Habitat deciduous woodland extending along / adjoining the southern site boundary. This risk was identified in the Phase 1 Report which recommended the completion of an ecological assessment.
- From ground instability from disturbance of the untreated abandoned mine entry within the south eastern corner of the site during construction of the overburden storage mound.

The ground investigation undertaken for this report has involved five window sampling boreholes to depths of between 1.00 and 2.80m begl, the recovery of soil and surface and groundwater samples for chemical laboratory testing and a programme of ground gas monitoring.

The purpose of the investigation was to characterise ground conditions and assess the potential contamination, ground gas and ground stability risks associated with the proposed quarry extension, including that part of the site within the south western corner which is recorded to have formed part of an historic landfill.

Made Ground was encountered at all exploratory hole locations where it was proven to its full depth ranging between 0.31 and 1.00m begl. The Made Ground is deepest within the area of the recorded historic landfill where it extended to shallow depths of between 0.85 and 1.00m begl. Within this area it comprises a brown slightly gravelly silty topsoil to depths of 0.20-0.30m begl which includes gravels of sandstone and occasional brick and indescript pebbles. This overlies a brown to dark brown gravelly slightly clayey silt in which the gravel component includes sandstone and occasional brick.

No evidence of any landfill such as putrescible or other materials consistent with what one would reasonably expect to encounter within inert, industrial, commercial or household waste was noted within the area of the site forming part of the recorded historic landfill[6]. From observation of the soils recovered within this area, it is considered that this part of the site has not been subjected to large scale historical waste tipping, but appears more likely that the soils have been reworked, possibly to create a more level field area.

[6] The landfill was licensed to accept inert, industrial, commercial and household waste between 1982 and 1990.

Elsewhere across the site, the Made Ground is generally thinner, extending to depths of between 0.31 and 0.47m begl and comprising a brown to dark brown gravelly silty topsoil in which the gravel component comprises sandstone.

Below the Made Ground, natural soils were encountered within that part of the site forming part of the recorded landfill and one other location and comprised mostly cohesive soils of clay, gravelly silty clay and clayey silt with a smaller proportion of granular coal. The natural soils extended to depths of 1.10-1.35m begl within the area of the recorded historic landfill and 0.00-2.30m begl elsewhere across the site.

Within that part of the site forming part of the recorded historic landfill, bedrock was encountered at depths of 1.20-1.95m begl as a thin weathered sandstone and weathered siltstone. Elsewhere across the site, bedrock was encountered as a weathered sandstone from 0.40m begl at WS03, a 0.10m thick coal band at 2.30m begl overlying weathered siltstone at WS04 and as a brownish orange weathered sandstone at 0.47m begl at WS05.

Groundwater was not encountered during the windowless sampling, but was recorded during the monitoring programme at depths ranging between 0.64 and 2.67m begl perched within the shallow soils above the bedrock. It should be noted that groundwater levels can vary on a seasonal basis and may therefore change from the conditions recorded during the investigation.

9.2 Contamination

Visual and Olfactory Evidence

During the investigation, no obvious visual or olfactory signs of significant potential contamination (such as hydrocarbon sheen and odours) were observed from the recovered soils or surface and groundwaters and no materials suspected of containing asbestos were noted in soils.

Soil Screening Assessment for Human Health

The soil contamination assessment for human health has been completed from the soil testing data based on an arable farming end use which is anticipated upon completion of quarrying and following restoration. However, it should be noted that these guideline values are considered quite stringent for assessing the health risk to quarry workers where the plant root uptake and soil adherence to crops pathways are not relevant.

The assessment has identified a single elevated concentration above the soil screening value (SSV) for lead within the Made Ground at a depth of 0.70-1.00m begl at WS01. The concentration determined was 130mg/kg compared to the SSV of 80mg/kg.

A single elevated concentration above the SSV in thiocyanate was also identified from the natural soil at a depth of 1.00-1.80m begl at the same location. The concentration determined was 82mg/kg compared to the SSV of 16mg/kg.

The contaminants identified above were at one location (WS01) within that part of the site forming part of the recorded historic landfill and were isolated elevations within the soil profile at this location.

Soil pH ranged from pH4.2 (extremely acidic) to pH7.2 (neutral) with an average of pH5.4 from across the investigation area, indicative of strongly acidic soil conditions.

Based on the above, the contamination risk to quarry workers has been assessed to be low, but the risk to the health of consumers of any crops grown in fields restored with soils originating from the south western part of the site and to farm workers working with these soils has been assessed to be low/moderate.

Proposals for Dealing with Contaminated Soils

At the time of overburden removal, it is recommended that the soils from within the south western part of the site are stockpiled separately from the soils removed from the remaining area of the site.

The proposed location of the segregated stockpile is at the end of the proposed screening mound on the eastern side of the application area as shown on the drawing provided in Appendix A. The elevated concentrations in lead and thiocyanate in the soil at WS01 have not been found to be potentially leachable into groundwater at concentrations considered to be harmful to the environment (see below). However, in view of the small sample dataset for this part of the site, it is proposed that a layer of site sourced clay will be placed at the base of this stockpile area as a precautionary measure to prevent leaching of contaminants.

It is also proposed that a visqueen membrane will be installed between the segregated soils and main screening mound to prevent cross contamination between the stockpiles. A post and barbed wire fence will also be installed delineating the position of the visqueen membrane.

Upon completion of quarrying and during the final phases of restoration following backfilling, it is considered that the soils from the segregated stockpile may be suitable for restoration providing that they are subjected to a programme of soil testing in accordance with guidance that will be applicable at the time for the laying of clean cover soils.

Controlled Waters Screening Assessment

The assessment on the potential risk to the water environment (surface and groundwater) has been completed based on the sampling and chemical analysis of two surface water samples (East Hill Beck adjoining part of the site to the south west and an off-site pond), one sample of perched groundwater (WS01) and soil leachate testing on samples from WS01 for lead and thiocyanate.

This identified an elevated concentration in monohydric phenol in the pond, but the level of exceedance above the screening level was considered to be of a low order of magnitude and therefore not considered overly significant.

An elevated concentration in ammoniacal nitrogen was also determined in the groundwater sample. Whilst the concentration determined was nearly five times the screening level, the screening level is based on a drinking water standard and is therefore highly conservative. Since the site is located in an agricultural area, leaching following muck spreading within the area generally has been considered as a potential source.

The pH of the groundwater from WS01 was also found to be strongly acidic with a pH of pH5.2. This is also similar to the soil pH at the same location and is consistent with soil pH values that have been determined from the natural soils across the site. The acidic groundwater at WS01 is not manifesting in East Hill Beck or in the nearby pond where pH levels are neutral.

The concentration in phenanthrene (a PAH compound) was noted to be slightly elevated in the groundwater sample (WS01) with all other PAH compounds being determined at concentrations below detection limits. Whilst there is no screening level for phenanthrene, it is listed as having a low overall relative mobility in groundwater and at the low concentration determined not considered overly significant.

In terms of the elevated concentrations in lead and thiocyanate identified in the soil at WS01, these have not been found to be potentially leachable into groundwater at concentrations which could have a detrimental impact on groundwater quality and were not detected at elevated concentrations in the groundwater sample.

Based on the above, the potential risk to controlled waters from the proposed quarry extension has been assessed to be low.

9.3 Ground Gas

The gas risk assessment based on the results of gas monitoring from three recently constructed shallow monitoring wells and three pre-existing deep well installations has determined the risk to quarry workers, off-site pedestrians, neighbours and property from ground gas (principally methane and carbon dioxide) to be very low to low. However, there will be an increased risk associated with any search for the abandoned mineshaft on site (see below), for which the appropriate precautions, such as the use of personal gas alarms, will be necessary.

9.4 Recorded Mine Entry

The abandoned mine shaft located within the south eastern corner of the site is within the area proposed for overburden storage. The shaft is not recorded to have been treated and the tracking of machinery and placement of overburden over the shaft may cause ground instability and collapse around the top of the shaft (sinkhole).

It is therefore recommended that when preparing the ground for the storage of overburden within this area, a search for the shaft is undertaken by scraping the surface with excavation machinery, followed by capping of the shaft in accordance with Coal Authority requirements.

9.5 Unforeseen Contamination (Discover Strategy)

From the time development commences on site, ongoing monitoring of any exposed sub-surface materials should take place. Should any unusual, oily, brightly coloured or odorous material, or unexpected buried tanks or containers be encountered, the advice of a suitably qualified specialist should be sought.

APPENDIX A

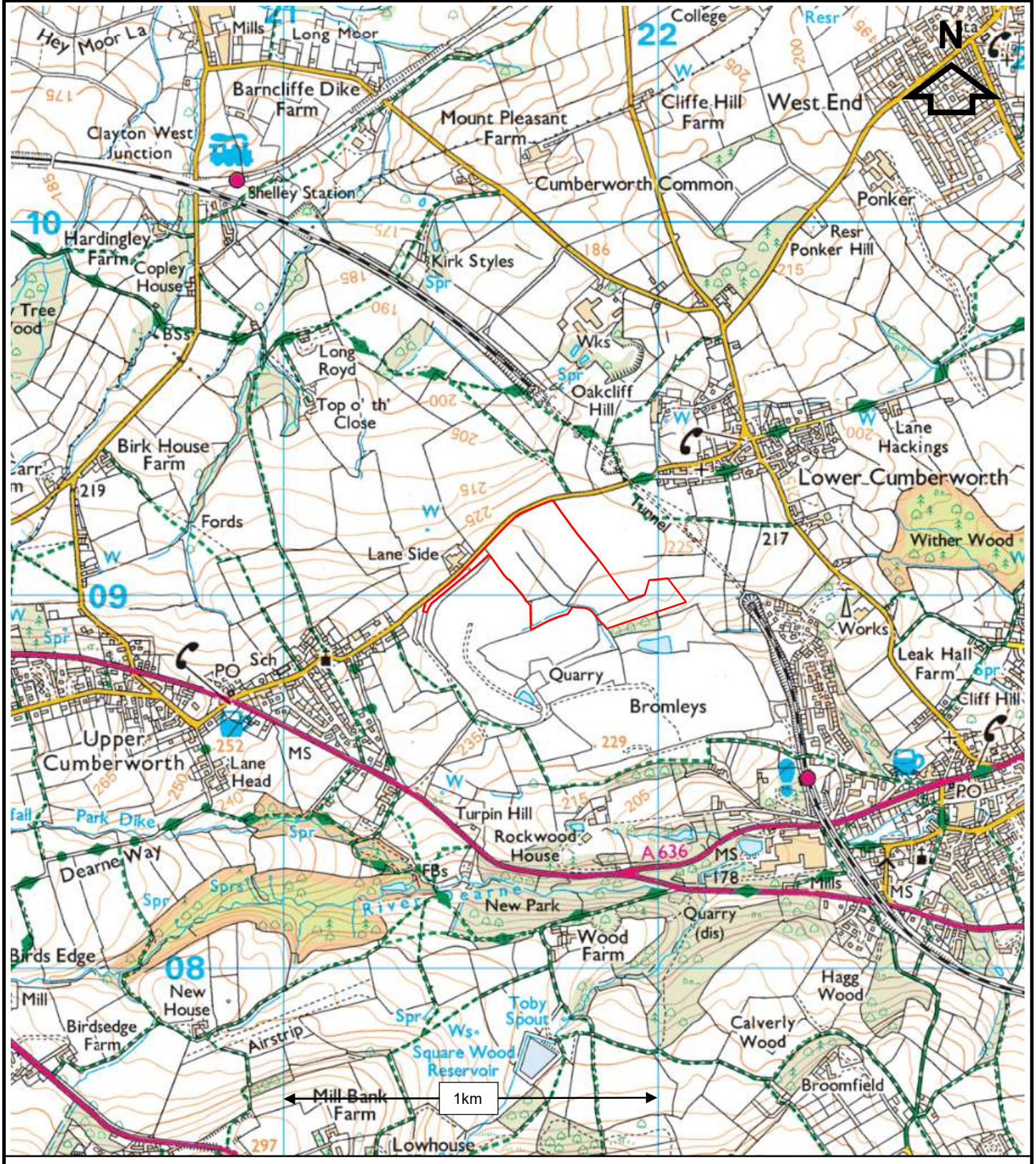
FIGURES

Figure 1: Site Location

Figure 2: Exploration Hole Locations

Drawings

Drawing no. 22007/515/1 *Contaminated Soils Area and Storage*, dated February 2024



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Project No: 22007
Client: Wavin UK (Holdings) Ltd
Project: Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD
Date: September 2023

Title:

Site Location

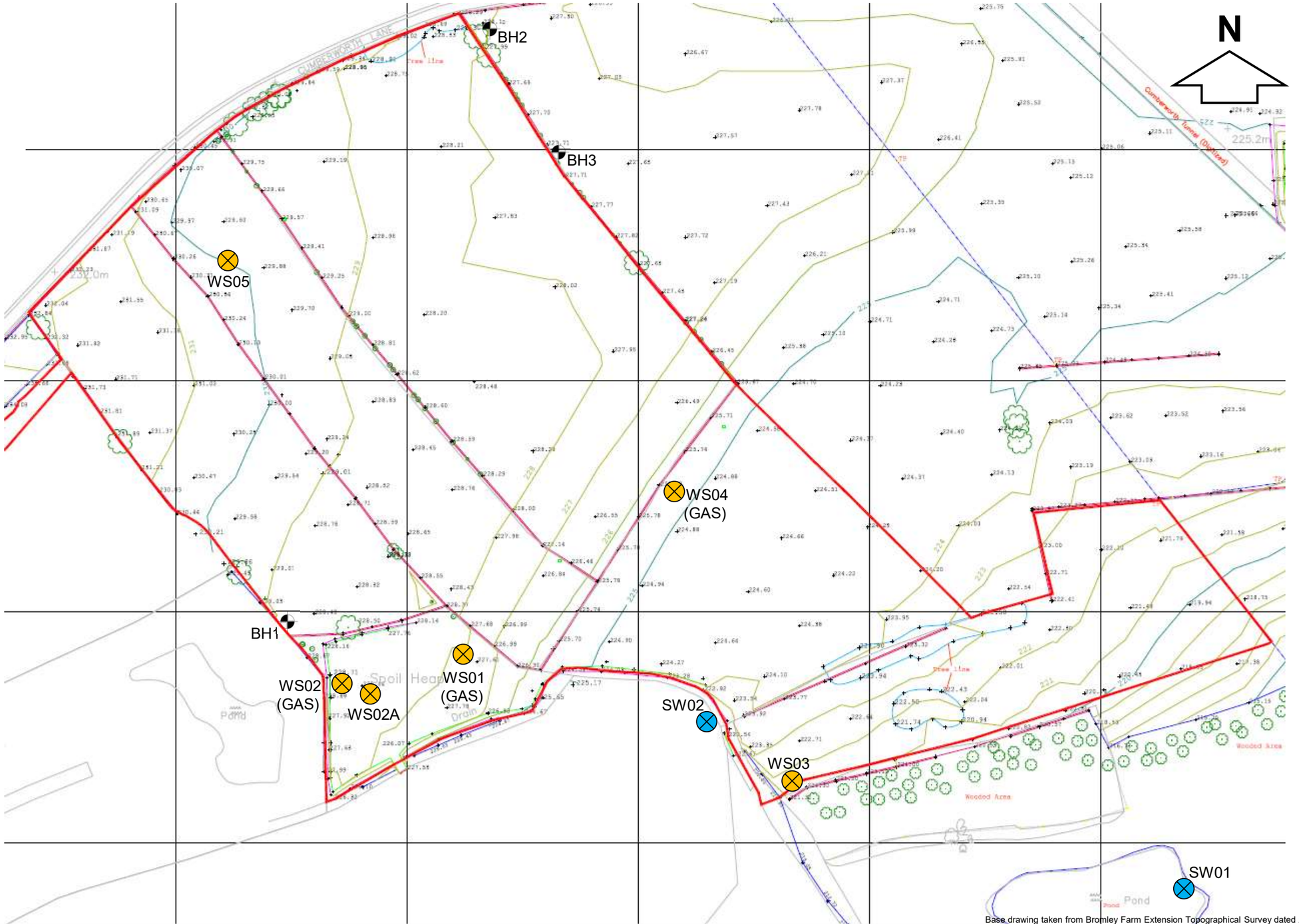
Key:

Site Location

Scale: Grid squares are 1km

SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

Fig: 1



Base drawing taken from Bromley Farm Extension Topographical Survey dated August 2023, SEL Dwg No. 22007/112

SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

Key:

- Investigation Area
- WS01 — Window Sampling location (GAS* monitoring well installation)
- SW01 — Surface water sampling point
- BH1 — Monitoring Boreholes (drilled 2021 for background water monitoring prior to permitting work on the extension)

Scale: Grid lines 100m spacing

Project No: 22007

Client: Wavin UK (Holdings) Ltd

Project: Bromley Farm Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD

Date: September 2023

Title:

Exploration Hole Locations

Fig: 2

Planning Application Area (8.4 Hectares)

Top soil and subsoil screening mound

Overburden storage mound

Contaminated Soil Area

Contaminated Soil Storage Area

Screening Mound 5m

Screening Mound 5m

Cuts 2 to 5
(all soils stripped to create screening mounds)

Cut 1
Soils and Overburden removed
and placed in storage areas

Temporary Overburden

Storage Area for
Contaminated Soils

To be seperated by
a visqueen
membrane and post
and wire fencing
with signage

Overburden Mound
5m

Water Treatment Area

Area of contaminated Soils
(Approximate Volume 2,700m3)

CUMBERWORTH LANE

BM 225.87m

224.3m

225.2m

Path (um)

Cumberworth Tunnel (Digitised)

Footpath

Pond

Pond

Spoil Heap

Spoil Heap

Wooded Area

Wooded Area

Rev	Description	Date	Drawn	Chkd

Client:

wavin

Project:

BROMLEY FARM
QUARRY EXTENSION

Plan Title:

CONTAMINATED SOILS AREA AND STORAGE

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk
7, Hall Annex, Thorncliffe Park, Chapeltown, Sheffield, S35 2PH
Tel (0114) 2573487 Fax (0114) 2573459

Project No. 22007	Dwg No. 22007/515	Rev
Date: Feb 24	Drawn: PS	Chkd: NP	Scale: 1:2000 @ A3

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APPENDIX B

Exploration Hole Logs

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,723.0 N 408,981.0	
Contractor				Sheet
Geospek Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.05-0.30	ES1					(0.30) 0.30	MADE GROUND: Brown slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of brick, indescript pebbles and sandstone (TOPSOIL).		
0.30-0.70	ES2					(0.70) 1.00	MADE GROUND: Dark brown gravelly slightly clayey SILT. Gravel is subangular fine to coarse sandstone and brick.		
0.70-1.10	ES3								
1.00-1.80	ES4	N12				(0.35) 1.35	Blackish grey slightly gravelly silty CLAY. Gravel is angular to subrounded fine mudstone and coal.		
1.00									
1.35-1.80	ES5					(0.45) 1.80	Black COAL recovered as sandy angular fine gravel.		
						(0.15) 1.95	Blackish orange gravelly CLAY. Gravel is angular fine coal.		
						2.00	Yellowish orange weathered SANDSTONE recovered as a gravelly sandy subangular medium cobble of sandstone. Gravel is subangular medium of same lithology.		
						(0.80) 2.80	Orangey grey highly weathered SILTSTONE recovered as a very silty slightly clayey angular fine gravel.		
							Sampler refused on highly weathered siltstone at 2.80m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 3.00m.
4. Monitoring well installed.

All dimensions in metres Scale 1:18.75	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

DYNAMIC PROBE LOG

Project				PROBE No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23			
Contractor				Sheet
Geospek Ltd				1 of 1

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values) 5 10 15 20 25 30	Torque (Nm)	Remarks
1				
2				
3	25			
4				
5				
6				
7				

Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 3.00m.
4. Monitoring well installed.

All dimensions in metres Scale 1:50	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

AGS3 DYNAMIC PROBE 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 26/10/23

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,672.0 N 408,970.0	
Contractor				Sheet 1 of 1
Geospek Ltd				

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.04-0.27	ES1					(0.27) 0.27	MADE GROUND: Brown slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of sandstone and brick (TOPSOIL).		
0.27-1.00	ES2					(0.73) 1.00	MADE GROUND: Brown gravelly SILT. Gravel is subangular medium sandstone.		
						(0.20) 1.20	Orangey grey gravelly very clayey SILT. Gravel is angular fine siltstone.		
							Sampler refused on highly weathered siltstone at 1.20m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 1.30m.
4. Monitoring well installed.

All dimensions in metres Scale 1:9.375	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

DYNAMIC PROBE LOG

Project				PROBE No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23			
Contractor				Sheet
Geospek Ltd				1 of 1

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values) 5 10 15 20 25 30	Torque (Nm)	Remarks
1	25			
2				
3				
4				
5				
6				
7				

Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 1.30m.
4. Monitoring well installed.

All dimensions in metres Scale 1:50	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

AGS3 DYNAMIC PROBE 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 26/10/23

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS02A**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,681.0 N 408,966.0	
Contractor				Sheet 1 of 1
Geospek Ltd				

SAMPLES & TESTS				STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Geology	Instrument/ Backfill
						(0.20) 0.20	MADE GROUND: Brown slightly gravelly SILT. Gravel is subangular medium sandstone (TOPSOIL).		
						(0.65) 0.85	MADE GROUND: Brown very gravelly SILT. Gravel is subangular medium sandstone.		
						(0.25) 1.10	Orangey grey gravelly clayey SILT. Gravel is subangular medium sandstone.		
						(0.25) 1.35	Stiff orangey grey CLAY.		
						1.40	Orangey grey weathered SILTSTONE recovered as a sandy angular to subangular fine gravel.		
							Sampler refused on weathered siltstone at 1.40m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 1.50m.

All dimensions in metres Scale 1:9.375	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

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Chapeltown, S35 2PH
Telephone: 0114 2573487

DYNAMIC PROBE LOG

Project				PROBE No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS02A**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23			
Contractor				Sheet
Geospek Ltd				1 of 1

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values) 5 10 15 20 25 30	Torque (Nm)	Remarks
1				
	32	32		
2				
3				
4				
5				
6				
7				

Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.
3. Follow on dynamic probing to 1.50m.

All dimensions in metres Scale 1:50	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

AGS3 DYNAMIC PROBE 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 26/10/23

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Silkstone Environmental Ltd
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Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS03**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,867.0 N 408,925.0	
Contractor				Sheet 1 of 1
Geospek Ltd				

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.01-0.40	ES1					(0.40) 0.40	MADE GROUND: Dark brown gravelly SILT. Gravel is subangular medium sandstone with a low cobble content of subangular sandstone (TOPSOIL).		
0.40-1.00	ES2					(0.60) 1.00	Whitish yellow weathered SANDSTONE recovered as a sandy subangular medium gravel with a moderate cobble content of same lithology.		
0.90		N50/ 85 mm					Sampler refused on sandstone at 1.00m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.

All dimensions in metres Scale 1:9.375	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS04**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,815.0 N 409,055.0	
Contractor				Sheet
Geospek Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.01-0.31	ES1					(0.31) 0.31	MADE GROUND: Brown slightly gravelly SILT. Gravel is subangular medium sandstone (TOPSOIL).		
0.31-0.70 0.31-2.30	ES2 ES3					(0.59) 0.90	Brownish black sandy slightly clayey angular fine GRAVEL of coal.		
0.70-1.20	ES4								
						(0.20) 1.10	Firm blackish orange gravelly CLAY. Gravel is angular fine coal.		
1.20-2.30	ES5					(0.20) 1.30	Black COAL recovered as a sandy angular fine gravel.		
						(1.00) 2.30	Firm blackish orange gravelly CLAY. Gravel is angular fine coal.		
						2.40	Black COAL recovered as a sandy angular fine gravel.		
						(0.30) 2.70	Grey highly weathered SILTSTONE recovered as sandy silty angular to sub angular fine gravel.		
2.70		N50/ 125 mm					Sampler refused on weathered siltstone at 2.70m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.

All dimensions in metres Scale 1:18.75	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

Silkstone
Environmental Ltd
www.silkstoneenvironmental.co.uk

Silkstone Environmental Ltd
7 Hall Annex, Thorncliffe Park
Chapeltown, S35 2PH
Telephone: 0114 2573487

WINDOW SAMPLE LOG

Project				Window Sample No
Bromley Farm Quarry Extension, Cumberworth Lane, Lower Cumberworth, HD8 8PD				**WS05**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
22007	21-09-23		E 421,620.0 N 409,151.0	
Contractor				Sheet
Geospek Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.01-0.47	ES1					(0.47)	MADE GROUND: Brown slightly gravelly SILT. Gravel is subangular medium sandstone (TOPSOIL).		
						0.47			
1.00		N62				(0.98)	Brownish orange weathered SANDSTONE recovered as sandy slightly clayey subangular fine gravel with a low cobble content of same lithology.		
						1.45			
							Sampler refused on weathered sandstone at 1.45m begl.		

Hole Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Window Sample Recovery			
From	To	Dia (m)	Rec (%)

GENERAL REMARKS

1. No groundwater encountered.
2. No visual or olfactory evidence of potential contamination.

All dimensions in metres Scale 1:9.375	Client Wavin UK (Holdings) Ltd	Method/ Plant Used Archway Competitor	Logged By P Stewart

WINDOW SAMPLE LOG 3M 22007 BROMLEY FARM QUARRY EXTENSION (WS).GPJ GINT STD AGS 3_1.GDT 14/2/24

APPENDIX C

Photographic Record

Photo 1: WS01 – Position of the first window sampling location on eastern part of historic landfill.

Photo 2: WS01 – Made Ground (Topsoil) arisings from hand dug inspection pit (depth progressing from left to right).

Photo 3: WS01 – Recovered soil core following penetration to sampler refusal at 2.80m begl (depth progressing from left to right and top to bottom).

Photo 4: WS02 – Made Ground (Topsoil) arisings from hand dug inspection pit (depth progressing from left to right).

Photo 5: WS02 – Recovered soil core following penetration to sampler refusal at 1.20m begl (depth progressing from left to right and top to bottom).

Photo 6: WS02A – Recovered soil cores following penetration to sampler refusal at 1.40m begl (depth progressing from left to right and top to bottom).

Photo 7: WS02 – Close up of the weathered siltstone at the base of the exploratory hole.

Photo 8: WS03 – Made Ground (Topsoil) arisings from hand dug inspection pit (depth progressing from left to right).

Photo 9: WS03 – Recovered soil core following penetration to sampler refusal at 1.00m begl (depth progressing from left to right).

Photo 10: WS03 – Close up of the weathered siltstone at the base of the exploratory hole.

Photo 11: WS04 – Made Ground (Topsoil) arisings from hand dug inspection pit and window sampling (depth progressing from left to right).

Photo 12: WS04 – Recovered soil cores following penetration to sampler refusal at 2.70m begl (depth progressing from left to right and top to bottom).

Photo 13: WS04 – Close up of the weathered siltstone at the base of the exploratory hole.

Photo 14: WS05 – Made Ground (Topsoil) and natural soil arisings from hand dug inspection pit (depth progressing from left to right).

Photo 15: WS05 – Recovered soil core (bottom) and SPT split spoon sample (top) following penetration to sampler refusal at 1.45m begl (depth progressing from left to right and bottom to top).

Photo 15: WS05 – Close up of weathered sandstone at the base of the exploratory hole.

Photo 16: Dry section of East Hill Beck downstream from sampling point.

Photo 17: Dry section of East Hill Beck downstream from sampling point.

Photo 18: Sampling point SW02 from East Hill Beck. The pipe represents the entrance to a short culverted section of the beck.

Photo 19: Groundwater sampled for chemical testing from WS01 on 02/10/2023.

APPENDIX D

Chemical Laboratory Testing Results

Certificate of Analysis

Certificate Number	23-22842	*Issued:*	06-Oct-23

Client Silkstone Environmental Ltd.
7 Hall Annex
Thorncliffe Park
Chapeltown
Sheffield
S35 2PH

Our Reference	23-22842
Client Reference	22007
Order No	SEL 22007-01
Contract Title	BROMLEY FARM EXTENSION, LOWER CUMBERWORTH
Description	12 Soil samples, 2 Leachate samples.
Date Received	25-Sep-23
Date Started	25-Sep-23
Date Completed	06-Oct-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes 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.

Approved By Redacted

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2238783	2238784	2238785	2238786	2238788	2238789
			.Sample ID	WS01	WS01	WS01	WS01	WS02	WS02
			Depth	0.05-0.30	0.30-0.70	0.70-1.00	1.00-1.80	0.04-0.27	0.27-1.00
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	19	23	22	22	21	17
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg		0.6	0.5	0.5	0.5	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.3	2.3	< 0.1	0.2	0.2
Chromium	DETSC 2301#	0.15	mg/kg	15	16	15	13	14	15
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26	33	44	46	29	26
Lead	DETSC 2301#	0.3	mg/kg	41	63	130	26	43	38
Mercury	DETSC 2325#	0.05	mg/kg	0.13	0.13	0.15	0.21	0.08	0.08
Nickel	DETSC 2301#	1	mg/kg	13	17	18	8.1	13	14
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.5	0.7	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	63	83	410	18	56	65
Inorganics									
pH	DETSC 2008#		pH	5.3	5.0	5.1	4.2	5.4	5.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.5	0.5	0.2	0.4	0.5
Thiocyanate	DETSC 2130#	0.6	mg/kg		0.9	1.4	82	4.5	3.5
Organic matter	DETSC 2002#	0.1	%	3.5	4.8	5.4	25	3.0	3.6
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	13	18	11	< 10	< 10	< 10
Sulphide	DETSC 2024*	10	mg/kg		< 10	12	< 10	20	32
Sulphur as S, Total	DETSC 2320	0.01	%		0.04	0.04	0.07	0.03	0.02
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.06	0.05	0.03	0.06	0.05
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg	468					
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5			< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2			< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5			< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4			< 3.4	
Aliphatic C35-C44	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4			< 3.4	
Aliphatic C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9			< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5			< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6			< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4			< 1.4	
Aromatic C35-C44	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4			< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2238783	2238784	2238785	2238786	2238788	2238789
			.Sample ID	WS01	WS01	WS01	WS01	WS02	WS02
			Depth	0.05-0.30	0.30-0.70	0.70-1.00	1.00-1.80	0.04-0.27	0.27-1.00
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	
Ali/Aro C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10			< 10	
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01			< 0.01	
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs									
PCB 77	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 81	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 105	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 114	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 118	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	
PCB 123	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 126	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 156	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 157	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 167	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 169	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
PCB 189	DETSC 3401*	0.01	mg/kg			< 0.01		< 0.01	
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3	0.5	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

				Lab No	2238783	2238784	2238785	2238786	2238788	2238789
				.Sample ID	WS01	WS01	WS01	WS01	WS02	WS02
				Depth	0.05-0.30	0.30-0.70	0.70-1.00	1.00-1.80	0.04-0.27	0.27-1.00
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
OCPs										
alpha-BHC	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
beta-BHC	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
delta-BHC	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Heptachlor	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Aldrin	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
gamma-Chlordane	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
4,4-DDE	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Dieldrin	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endrin	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endrin aldehyde	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
4,4-DDT	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Methoxychlor	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Endrin ketone	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
OPPs										
Dichlorvos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Mevinphos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Demeton-O	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Ethoprop	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Naled	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Phorate	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Demeton-S	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Diazinon	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Disulfoton	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Methylparathion	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Ronnel	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Fenthion	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Chlopyrifos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Trichlorinate	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Merphos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Stirofos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Tokuthion	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Fensulfothion	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Bolstar	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Azinphos methyl	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	
Coumaphos	DETSC 3433*	0.1	mg/kg			< 0.1		< 0.1	

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWOR

			Lab No	2238790	2238791	2238792	2238793	2238794	2238795
			.Sample ID	WS03	WS04	WS04	WS04	WS04	WS05
			Depth	0.01-0.40	0.01-0.31	0.31-2.30	0.70-1.20	1.20-2.30	0.01-0.47
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	30	27	15	18	8.3	21
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg					1.3	
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.1	0.2	< 0.1	0.4
Chromium	DETSC 2301#	0.15	mg/kg	12	13	13	17	15	14
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	34	34	56	35	19	33
Lead	DETSC 2301#	0.3	mg/kg	75	45	18	24	12	56
Mercury	DETSC 2325#	0.05	mg/kg	0.24	0.13	0.11	0.21	0.06	0.09
Nickel	DETSC 2301#	1	mg/kg	14	9.7	11	16	11	16
Selenium	DETSC 2301#	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg	56	43	24	31	30	96
Inorganics									
pH	DETSC 2008#		pH	6.1	7.2	4.7	4.8	5.0	6.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg					0.1	
Thiocyanate	DETSC 2130#	0.6	mg/kg					4.9	
Organic matter	DETSC 2002#	0.1	%	12	6.3	8.0	16	2.7	5.0
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	12	15	< 10	12	11	< 10
Sulphide	DETSC 2024*	10	mg/kg					24	
Sulphur as S, Total	DETSC 2320	0.01	%					0.02	
Sulphate as SO4, Total	DETSC 2321#	0.01	%					0.02	
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg	601	533	180	308		571
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2		< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4		< 3.4		< 3.4
Aliphatic C35-C44	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4		< 3.4		< 3.4
Aliphatic C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9		< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5		< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6		< 0.6		< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4		< 1.4		< 1.4
Aromatic C35-C44	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4		< 1.4		< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWOR

			Lab No	2238790	2238791	2238792	2238793	2238794	2238795
			.Sample ID	WS03	WS04	WS04	WS04	WS04	WS05
			Depth	0.01-0.40	0.01-0.31	0.31-2.30	0.70-1.20	1.20-2.30	0.01-0.47
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10
Ali/Aro C10-C44	DETSC 3072*	10	mg/kg	< 10	< 10		< 10		< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01		< 0.01		< 0.01
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.6	< 0.1	< 0.1	< 0.1	0.2	0.2
Pyrene	DETSC 3301	0.1	mg/kg	1.1	0.9	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	4.0	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs									
PCB 77	DETSC 3401*	0.01	mg/kg						
PCB 81	DETSC 3401*	0.01	mg/kg						
PCB 105	DETSC 3401*	0.01	mg/kg						
PCB 114	DETSC 3401*	0.01	mg/kg						
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 123	DETSC 3401*	0.01	mg/kg						
PCB 126	DETSC 3401*	0.01	mg/kg						
PCB 156	DETSC 3401*	0.01	mg/kg						
PCB 157	DETSC 3401*	0.01	mg/kg						
PCB 167	DETSC 3401*	0.01	mg/kg						
PCB 169	DETSC 3401*	0.01	mg/kg						
PCB 189	DETSC 3401*	0.01	mg/kg						
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg					< 0.3	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWOR

			Lab No	2238790	2238791	2238792	2238793	2238794	2238795
			.Sample ID	WS03	WS04	WS04	WS04	WS04	WS05
			Depth	0.01-0.40	0.01-0.31	0.31-2.30	0.70-1.20	1.20-2.30	0.01-0.47
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
OCPs									
alpha-BHC	DETSC 3433*	0.1	mg/kg						
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg						
beta-BHC	DETSC 3433*	0.1	mg/kg						
delta-BHC	DETSC 3433*	0.1	mg/kg						
Heptachlor	DETSC 3433*	0.1	mg/kg						
Aldrin	DETSC 3433*	0.1	mg/kg						
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg						
gamma-Chlordane	DETSC 3433*	0.1	mg/kg						
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg						
4,4-DDE	DETSC 3433*	0.1	mg/kg						
Dieldrin	DETSC 3433*	0.1	mg/kg						
Endrin	DETSC 3433*	0.1	mg/kg						
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg						
Endrin aldehyde	DETSC 3433*	0.1	mg/kg						
4,4-DDT	DETSC 3433*	0.1	mg/kg						
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg						
Methoxychlor	DETSC 3433*	0.1	mg/kg						
Endrin ketone	DETSC 3433*	0.1	mg/kg						
OPPs									
Dichlorvos	DETSC 3433*	0.1	mg/kg						
Mevinphos	DETSC 3433*	0.1	mg/kg						
Demeton-O	DETSC 3433*	0.1	mg/kg						
Ethoprop	DETSC 3433*	0.1	mg/kg						
Naled	DETSC 3433*	0.1	mg/kg						
Phorate	DETSC 3433*	0.1	mg/kg						
Demeton-S	DETSC 3433*	0.1	mg/kg						
Diazinon	DETSC 3433*	0.1	mg/kg						
Disulfoton	DETSC 3433*	0.1	mg/kg						
Methylparathion	DETSC 3433*	0.1	mg/kg						
Ronnel	DETSC 3433*	0.1	mg/kg						
Fenthion	DETSC 3433*	0.1	mg/kg						
Chlopyrifos	DETSC 3433*	0.1	mg/kg						
Trichlorinate	DETSC 3433*	0.1	mg/kg						
Merphos	DETSC 3433*	0.1	mg/kg						
Stirofos	DETSC 3433*	0.1	mg/kg						
Tokuthion	DETSC 3433*	0.1	mg/kg						
Fensulfothion	DETSC 3433*	0.1	mg/kg						
Bolstar	DETSC 3433*	0.1	mg/kg						
Azinphos methyl	DETSC 3433*	0.1	mg/kg						
Coumaphos	DETSC 3433*	0.1	mg/kg						

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2238785	2238789
			.Sample ID	WS01	WS02
			Depth	0.70-1.00	0.27-1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2238785	2238789
			.Sample ID	WS01	WS02
			Depth	0.70-1.00	0.27-1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2238785	2238789
			.Sample ID	WS01	WS02
			Depth	0.70-1.00	0.27-1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH *Sample Numbers* 2238784 2238796
Sample Id WS01 0.30-0.70 *Date Analysed* 06/10/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	5.1	3	5	6
DETSC 2003# Loss On Ignition	%	9.9	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	5.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.47	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	1.7	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.99	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.15	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	2200	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3400	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	18000	180	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	4900	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.2
DETSC 2009 Conductivity uS/cm	25.4
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.995
Volume of Eluate VE1*	0.94

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH *Sample Numbers* 2238789 2238797
Sample Id WS02 0.27-1.00 *Date Analysed* 04/10/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	3.9	3	5	6
DETSC 2003# Loss On Ignition	%	7.0	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	5.3	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	6.6	0.066	0.5	2	25
DETSC 2306 Barium as Ba	2.9	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.49	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.3	0.023	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.3	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	3.5	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.34	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1100	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	210	2.1	10	150	500
DETSC 2055 Sulphate as SO4	2700	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	24000	240	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	4300	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.0
DETSC 2009 Conductivity uS/cm	33.9
* Temperature*	18.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.098
Stage 1	
Volume of Leachant L2*	0.97
Volume of Eluate VE1*	0.91

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-22842
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2238783	WS01 0.05-0.30	SOIL	NAD	none	Vicky Convery
2238784	WS01 0.30-0.70	SOIL	NAD	none	Vicky Convery
2238788	WS02 0.04-0.27	SOIL	NAD	none	Vicky Convery
2238789	WS02 0.27-1.00	SOIL	NAD	none	Vicky Convery
2238790	WS03 0.01-0.40	SOIL	NAD	none	Vicky Convery
2238791	WS04 0.01-0.31	SOIL	NAD	none	Vicky Convery
2238795	WS05 0.01-0.47	SOIL	NAD	none	Vicky Convery

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-22842
Client Ref 22007
Contract BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2238783	WS01 0.05-0.30 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238784	WS01 0.30-0.70 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238785	WS01 0.70-1.00 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238786	WS01 1.00-1.80 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238787	WS01 1.35-1.80 SOIL	21/09/23	GJ 250ml x2, GJ 60ml, PT 1L		
2238788	WS02 0.04-0.27 SOIL	21/09/23	GJ 250ml x2, GJ 60ml, PT 1L		
2238789	WS02 0.27-1.00 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238790	WS03 0.01-0.40 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238791	WS04 0.01-0.31 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238792	WS04 0.31-2.30 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238793	WS04 0.70-1.20 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238794	WS04 1.20-2.30 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238795	WS05 0.01-0.47 SOIL	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238796	WS01 0.30-0.70 LEACHATE	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2238797	WS02 0.27-1.00 LEACHATE	21/09/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Certificate of Analysis

Certificate Number	23-24003	*Issued:*	16-Oct-23

Client Silkstone Environmental Ltd.
7 Hall Annex
Thorncliffe Park
Chapeltown
Sheffield
S35 2PH

Our Reference	23-24003
Client Reference	22007
Order No	SEL 22007-01
Contract Title	BROMLEY FARM EXTENSION, LOWER CUMBERWORTH
Description	2 Leachate samples.
Date Received	25-Sep-23
Date Started	10-Oct-23
Date Completed	16-Oct-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes 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.

Approved By Redacted

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-24003
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2245587	2245588
			.Sample ID	WS01	WS01
			Depth	0.70-1.00	1.00-1.80
			Other ID		
			Sample Type	LEACHATE	LEACHATE
			Sampling Date	21/09/2023	21/09/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
BS EN 12457 10:1	DETSC 1009*			Y	Y
Metals					
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.45	
Inorganics					
Thiocyanate	DETSC 2130	20	ug/l		< 20

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-24003
Client Ref 22007
Contract BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2245587	WS01 0.70-1.00 LEACHATE	21/09/23	GJ 250ml, GJ 60ml, PT 1L		
2245588	WS01 1.00-1.80 LEACHATE	21/09/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Certificate of Analysis

Certificate Number	23-23289	*Issued:*	03-Nov-23

Client Silkstone Environmental Ltd.
7 Hall Annex
Thorncliffe Park
Chapeltown
Sheffield
S35 2PH

Our Reference	23-23289
Client Reference	22007
Order No	SEL 22007-2
Contract Title	BROMLEY FARM EXTENSION, LOWER CUMBERWORTH
Description	2 Water samples.
Date Received	02-Oct-23
Date Started	02-Oct-23
Date Completed	03-Nov-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes 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.

Approved By Redacted

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.2	0.26
Boron, Dissolved	DETSC 2306*	12	ug/l	64	28
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.71	0.59
Copper, Dissolved	DETSC 2306	0.4	ug/l	3.3	2.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.10	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.8	4.0
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.30	0.36
Zinc, Dissolved	DETSC 2306	1.3	ug/l	43	59
Inorganics					
Conductivity	DETSC 2009	1	uS/cm	479	306
pH	DETSC 2008		pH	6.9	6.6
Biochemical Oxygen Demand, Total	DETSC 2031	1	mg/l	1.2	3.5
Cyanide, Total Low Level	DETSC 2131	0.1	ug/l	0.4	0.9
Phenol - Monohydric	DETSC 2131	0.0015	mg/l	0.0095	0.0057
Thiocyanate	DETSC 2130	20	ug/l	< 20	< 20
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.13	< 0.015
Chloride	DETSC 2055	0.1	mg/l	63	12
Sulphate as SO4	DETSC 2055	0.1	mg/l	25	35
Sulphide	DETSC 2208	10	ug/l	20	< 10
Sulphur as S, Total	DETSC 2320*	10	mg/l	< 10	14
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C10-C44	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C35-C44	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C35-C44	DETSC 3072*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Aromatic C10-C44	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Ali/Aro C10-C44	DETSC 3072*	1	ug/l	< 1.0	< 1.0
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Benzene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0	< 1.0
MTBE	DETSC 3322	1	ug/l	< 1.0	< 1.0
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20
PCBs					
PCB 77	DETSC 3402	0.3	ug/l	< 0.3	< 0.3
PCB 81	DETSC 3402	0.2	ug/l	< 0.2	< 0.2
PCB 105	DETSC 3402	0.2	ug/l	< 0.2	< 0.2
PCB 114	DETSC 3402	0.3	ug/l	< 0.3	< 0.3
PCB 118 + PCB 123	DETSC 3402	0.6	ug/l	< 0.6	< 0.6
PCB 126	DETSC 3402	0.5	ug/l	< 0.5	< 0.5
PCB 156	DETSC 3402	0.3	ug/l	< 0.3	< 0.3
PCB 157	DETSC 3402	0.2	ug/l	< 0.2	< 0.2
PCB 167	DETSC 3402	0.3	ug/l	< 0.3	< 0.3
PCB 169	DETSC 3402	0.2	ug/l	< 0.2	< 0.2
PCB 189	DETSC 3402	0.3	ug/l	< 0.3	< 0.3
PCB 12	DETSC 3402	1	ug/l	< 1.0	< 1.0
OCPs					
alpha-BHC	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
gamma-BHC (Lindane)	DETSC 3434*	1	ug/l	< 1.0	< 1.0
beta-BHC	DETSC 3434*	1	ug/l	< 1.0	< 1.0
delta-BHC	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Heptachlor	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Aldrin	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Heptachlor epoxide	DETSC 3434*	1	ug/l	< 1.0	< 1.0
gamma-Chlordane	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endosulphan I	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4,4-DDE	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dieldrin	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endrin	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endosulphan II	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endrin aldehyde	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4,4-DDT	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endosulphan sulphate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Methoxychlor	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Endrin ketone	DETSC 3434*	1	ug/l	< 1.0	< 1.0
OPPs					
Dichlorvos	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Mevinphos	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Demeton-O	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Ethoprop	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Naled	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Phorate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Demeton-S	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diazinon	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Disulfoton	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Methylparathion	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Ronnel	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Fenthion	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Chlopyrifos	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Trichlorinate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Merphos	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Stirofos	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Tokuthion	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Fensulfothion	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bolstar	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Azinphos methyl	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Coumaphos	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
VOCs					
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
2,2-dichloropropane	DETSC 3432*	2	ug/l	< 2	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4	< 4
Chloroform	DETSC 3432	1	ug/l	< 1	< 1
1,1,1-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1	< 1
Benzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Toluene	DETSC 3432	1	ug/l	< 1	< 1
trans-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1	< 1
1,2-dibromoethane	DETSC 3432	1	ug/l	< 1	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
m+p-Xylene	DETSC 3432	2	ug/l	< 2	< 2
o-Xylene	DETSC 3432	1	ug/l	< 1	< 1
Styrene	DETSC 3432	1	ug/l	< 1	< 1
Bromoform	DETSC 3432	1	ug/l	< 1	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Bromobenzene	DETSC 3432	1	ug/l	< 1	< 1

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1	< 1
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1	< 1
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
MTBE	DETSC 3432*	1	ug/l	< 1	< 1
SVOCs					
Phenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Aniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dimethylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Nitrophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dibenzofuran	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23289
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

			Lab No	2241372	2241373
			.Sample ID	SW01	SW02
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	26/09/2023	26/09/2023
			Sampling Time	1040	1115
Test	**Method**	**LOD**	**Units**		
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diphenylamine	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Pentachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dimethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Azobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Carbazole	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited.

Information in Support of the Analytical Results

Our Ref 23-23289
Client Ref 22007
Contract BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2241372	SW01 WATER	26/09/23	GB 1L x3, GV x3, PB 1L	Aliphatics/Aromatics (4 days), BOD (2 days), Kone (4 days), Kone (Sulphide) (5 days), pH/Cond (1 days), PAH MS (4 days)	
2241373	SW02 WATER	26/09/23	GB 1L x3, GV x3, PB 1L	Aliphatics/Aromatics (4 days), BOD (2 days), Kone (4 days), Kone (Sulphide) (5 days), pH/Cond (1 days), PAH MS (4 days)	

Key: G-Glass P-Plastic B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Certificate of Analysis

Certificate Number	23-23548	*Issued:*	03-Nov-23

Client Silkstone Environmental Ltd.
7 Hall Annex
Thorncliffe Park
Chapeltown
Sheffield
S35 2PH

Our Reference	23-23548
Client Reference	22007
Order No	SEL22007-03
Contract Title	BROMLEY FARM EXTENSION, LOWER CUMBERWORTH
Description	One Water sample.
Date Received	04-Oct-23
Date Started	04-Oct-23
Date Completed	03-Nov-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes 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.

Approved By Redacted

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.69
Boron, Dissolved	DETSC 2306*	12	ug/l	100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.8
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.33
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.6
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.29
Zinc, Dissolved	DETSC 2306	1.3	ug/l	190
Inorganics				
Conductivity	DETSC 2009	1	uS/cm	71.1
pH	DETSC 2008		pH	5.2
Biochemical Oxygen Demand, Total	DETSC 2031	1	mg/l	3.1
Cyanide, Total Low Level	DETSC 2131	0.1	ug/l	0.2
Phenol - Monohydric	DETSC 2131	0.0015	mg/l	0.024
Thiocyanate	DETSC 2130	20	ug/l	< 20
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	2.8
Chloride	DETSC 2055	0.1	mg/l	9.8
Sulphate as SO4	DETSC 2055	0.1	mg/l	19
Sulphide	DETSC 2208	10	ug/l	42
Sulphur as S, Total	DETSC 2320*	10	mg/l	< 10
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	1.3
Aliphatic C10-C44	DETSC 3072*	1	ug/l	64
Aliphatic C12-C16	DETSC 3072*	1	ug/l	16
Aliphatic C16-C21	DETSC 3072*	1	ug/l	46
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C35-C44	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	64
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C35-C44	DETSC 3072*	1	ug/l	< 1.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C10-C44	DETSC 3072*	1	ug/l	< 1.0
Ali/Aro C10-C44	DETSC 3072*	1	ug/l	64
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l	65
Benzene	DETSC 3322	1	ug/l	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0
MTBE	DETSC 3322	1	ug/l	< 1.0
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	< 0.50
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.10
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.10
Fluorene	DETSC 3304	0.01	ug/l	< 0.10
Phenanthrene	DETSC 3304	0.01	ug/l	0.35
Anthracene	DETSC 3304	0.01	ug/l	< 0.10
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.10
Pyrene	DETSC 3304	0.01	ug/l	< 0.10
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	< 0.10
Chrysene	DETSC 3304	0.01	ug/l	< 0.10
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.10
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.10
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.10
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.10
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.10
PAH Total	DETSC 3304	0.2	ug/l	< 2.00
PCBs				
PCB 77	DETSC 3402	0.3	ug/l	< 0.3
PCB 81	DETSC 3402	0.2	ug/l	< 0.2
PCB 105	DETSC 3402	0.2	ug/l	< 0.2
PCB 114	DETSC 3402	0.3	ug/l	< 0.3
PCB 118 + PCB 123	DETSC 3402	0.6	ug/l	< 0.6
PCB 126	DETSC 3402	0.5	ug/l	< 0.5
PCB 156	DETSC 3402	0.3	ug/l	< 0.3
PCB 157	DETSC 3402	0.2	ug/l	< 0.2
PCB 167	DETSC 3402	0.3	ug/l	< 0.3
PCB 169	DETSC 3402	0.2	ug/l	< 0.2
PCB 189	DETSC 3402	0.3	ug/l	< 0.3
PCB 12	DETSC 3402	1	ug/l	< 1.0
OCPs				
alpha-BHC	DETSC 3434*	1	ug/l	< 5.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
gamma-BHC (Lindane)	DETSC 3434*	1	ug/l	< 5.0
beta-BHC	DETSC 3434*	1	ug/l	< 5.0
delta-BHC	DETSC 3434*	1	ug/l	< 5.0
Heptachlor	DETSC 3434*	1	ug/l	< 5.0
Aldrin	DETSC 3434*	1	ug/l	< 5.0
Heptachlor epoxide	DETSC 3434*	1	ug/l	< 5.0
gamma-Chlordane	DETSC 3434*	1	ug/l	< 5.0
Endosulphan I	DETSC 3434*	1	ug/l	< 5.0
4,4-DDE	DETSC 3434*	1	ug/l	< 5.0
Dieldrin	DETSC 3434*	1	ug/l	< 5.0
Endrin	DETSC 3434*	1	ug/l	< 5.0
Endosulphan II	DETSC 3434*	1	ug/l	< 5.0
Endrin aldehyde	DETSC 3434*	1	ug/l	< 5.0
4,4-DDT	DETSC 3434*	1	ug/l	< 5.0
Endosulphan sulphate	DETSC 3434*	1	ug/l	< 5.0
Methoxychlor	DETSC 3434*	1	ug/l	< 5.0
Endrin ketone	DETSC 3434*	1	ug/l	< 5.0
OPPs				
Dichlorvos	DETSC 3434*	1	ug/l	< 5.0
Mevinphos	DETSC 3434*	1	ug/l	< 5.0
Demeton-O	DETSC 3434*	1	ug/l	< 5.0
Ethoprop	DETSC 3434*	1	ug/l	< 5.0
Naled	DETSC 3434*	1	ug/l	< 5.0
Phorate	DETSC 3434*	1	ug/l	< 5.0
Demeton-S	DETSC 3434*	1	ug/l	< 5.0
Diazinon	DETSC 3434*	1	ug/l	< 5.0
Disulfoton	DETSC 3434*	1	ug/l	< 5.0
Methylparathion	DETSC 3434*	1	ug/l	< 5.0
Ronnel	DETSC 3434*	1	ug/l	< 5.0
Fenthion	DETSC 3434*	1	ug/l	< 5.0
Chlopyrifos	DETSC 3434*	1	ug/l	< 5.0
Trichlorinate	DETSC 3434*	1	ug/l	< 5.0
Merphos	DETSC 3434*	1	ug/l	< 5.0
Stirofos	DETSC 3434*	1	ug/l	< 5.0
Tokuthion	DETSC 3434*	1	ug/l	< 5.0
Fensulfothion	DETSC 3434*	1	ug/l	< 5.0
Bolstar	DETSC 3434*	1	ug/l	< 5.0
Azinphos methyl	DETSC 3434*	1	ug/l	< 5.0
Coumaphos	DETSC 3434*	1	ug/l	< 5.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
VOCs				
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1
2,2-dichloropropane	DETSC 3432*	2	ug/l	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4
Chloroform	DETSC 3432	1	ug/l	< 1
1,1,1-trichloroethane	DETSC 3432	1	ug/l	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1
Benzene	DETSC 3432	1	ug/l	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1
Toluene	DETSC 3432	1	ug/l	< 1
trans-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1
1,1,2-trichloroethane	DETSC 3432	1	ug/l	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1
1,3-dichloropropane	DETSC 3432	1	ug/l	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1
1,2-dibromoethane	DETSC 3432	1	ug/l	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1
m+p-Xylene	DETSC 3432	2	ug/l	< 2
o-Xylene	DETSC 3432	1	ug/l	< 1
Styrene	DETSC 3432	1	ug/l	< 1
Bromoform	DETSC 3432	1	ug/l	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1
Bromobenzene	DETSC 3432	1	ug/l	< 1

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l	< 1
MTBE	DETSC 3432*	1	ug/l	< 1
SVOCs				
Phenol	DETSC 3434*	1	ug/l	< 5.0
Aniline	DETSC 3434*	1	ug/l	< 5.0
2-Chlorophenol	DETSC 3434*	1	ug/l	< 5.0
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 5.0
2-Methylphenol	DETSC 3434*	1	ug/l	< 5.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 5.0
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 5.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 5.0
2,4-Dimethylphenol	DETSC 3434*	1	ug/l	< 5.0
2,4-Dichlorophenol	DETSC 3434*	1	ug/l	< 5.0
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 5.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 5.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 5.0
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 5.0
2-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0
3-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
4-Nitrophenol	DETSC 3434*	1	ug/l	< 5.0
Dibenzofuran	DETSC 3434*	1	ug/l	< 5.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 23-23548
Client Ref 22007
Contract Title BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Lab No	2242780
.Sample ID	WS01
Depth	1.99-2.58
Other ID	
Sample Type	WATER
Sampling Date	02/10/2023
Sampling Time	1151

Test	Method	LOD	Units	
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Diethylphthalate	DETSC 3434*	1	ug/l	< 5.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 5.0
4-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0
Diphenylamine	DETSC 3434*	1	ug/l	< 5.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 5.0
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 5.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 5.0
Pentachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 5.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 5.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 5.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 5.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0
Dimethylphthalate	DETSC 3434*	1	ug/l	< 5.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0
Azobenzene	DETSC 3434*	1	ug/l	< 5.0
Carbazole	DETSC 3434*	1	ug/l	< 5.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0

Key: * -not accredited.

Information in Support of the Analytical Results

Our Ref 23-23548
Client Ref 22007
Contract BROMLEY FARM EXTENSION, LOWER CUMBERWORTH

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2242780	WS01 1.99-2.58 WATER	02/10/23	GB 1L x2, GV x3	pH/Cond (1 days)	

Key: G-Glass B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

APPENDIX E

Soil Contamination Screening Assessment for Human Health

DETS Job No. 23-22842
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Soil Contamination Screening Assessment for Human Health

						Southwestern Part of Site						Arable Fields					
				GAC (Allotments)	Source of GACs												
Lab No						2238783	2238784	2238785	2238786	2238788	2238789	2238790	2238791	2238792	2238793	2238794	2238795
Sample ID						WS01	WS01	WS01	WS01	WS02	WS02	WS03	WS04	WS04	WS04	WS04	WS05
Depth						0.05-0.30	0.30-0.70	0.70-1.00	1.00-1.80	0.04-0.27	0.27-1.00	0.01-0.40	0.01-0.31	0.31-2.30	0.70-1.20	1.20-2.30	0.01-0.47
Other ID						MG	MG	MG	Nat.	MG	MG	MG	MG	Nat.	Nat.	Nat.	MG
Sample Type						SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date						21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Sampling Time						n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**														
Metals																	
Arsenic	DETSC 2301#	0.2	mg/kg	49	DEFRA C4SL 2014	19	23	22	22	21	17	30	27	15	18	8.3	21
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	45	LQM/CIEH S4UL 2015		0.6	0.5	0.5	0.5	0.4					1.3	
Cadmium	DETSC 2301#	0.1	mg/kg	3.9	DEFRA C4SL 2014	0.2	0.3	2.3	< 0.1	0.2	0.2	0.3	0.3	0.1	0.2	< 0.1	0.4
Chromium	DETSC 2301#	0.15	mg/kg	18,000	LQM/CIEH S4UL 2015	15	16	15	13	14	15	12	13	13	17	15	14
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	170	DEFRA C4SL 2014	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	520	LQM/CIEH S4UL 2015	26	33	44	46	29	26	34	34	56	35	19	33
Lead	DETSC 2301#	0.3	mg/kg	80	DEFRA C4SL 2014	41	63	130	26	43	38	75	45	18	24	12	56
Mercury	DETSC 2325#	0.05	mg/kg	19	LQM/CIEH S4UL 2015	0.13	0.13	0.15	0.21	0.08	0.08	0.24	0.13	0.11	0.21	0.06	0.09
Nickel	DETSC 2301#	1	mg/kg	53	LQM/CIEH S4UL 2015	13	17	18	8.1	13	14	14	9.7	11	16	11	16
Selenium	DETSC 2301#	0.5	mg/kg	88	LQM/CIEH S4UL 2015	< 0.5	< 0.5	0.5	0.7	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg	620	LQM/CIEH S4UL 2015	63	83	410	18	56	65	56	43	24	31	30	96
Asbestos																	
Asbestos fibres in soil (Stage 1)				Presence	N/A	NAD	NAD			NAD	NAD	NAD	NAD				NAD
Inorganics																	
pH (pH4.2-7.2, average=65/12=pH5.4)	DETSC 2008#		pH			5.3	5.0	5.1	4.2	5.4	5.3	6.1	7.2	4.7	4.8	5.0	6.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	23	USEPA RSL 2023 (Res. soil)		0.5	0.5	0.2	0.4	0.5					0.1	
Thiocyanate	DETSC 2130#	0.6	mg/kg	16	USEPA RSL 2023 (Res. soil)		0.9	1.4	82	4.5	3.5					4.9	
Organic matter (average=95.3/12=7.94%)	DETSC 2002#	0.1	%			3.5	4.8	5.4	25	3.0	3.6	12	6.3	8.0	16	2.7	5.0
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l			13	18	11	< 10	< 10	< 10	12	15	< 10	12	11	< 10
Sulphide	DETSC 2024*	10	mg/kg				< 10	12	< 10	20	32					24	
Sulphur as S, Total	DETSC 2320	0.01	%				0.04	0.04	0.07	0.03	0.02					0.02	
Sulphate as SO4, Total	DETSC 2321#	0.01	%				0.06	0.05	0.03	0.06	0.05					0.02	
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg			468						601	533	180	308		571
Petroleum Hydrocarbons				GACs for 6% SOM													
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	3,900	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	13,000	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	1,700	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	7,300	LQM/CIEH S4UL 2015	< 1.5	< 1.5			< 1.5		< 1.5	< 1.5		< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	13,000	LQM/CIEH S4UL 2015	< 1.2	< 1.2			< 1.2		< 1.2	< 1.2		< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	270,000	LQM/CIEH S4UL 2015	< 1.5	< 1.5			< 1.5		< 1.5	< 1.5		< 1.5		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	270,000	LQM/CIEH S4UL 2015	< 3.4	< 3.4			< 3.4		< 3.4	< 3.4		< 3.4		< 3.4
Aliphatic C35-C44	DETSC 3072*	3.4	mg/kg	270,000	LQM/CIEH S4UL 2015	< 3.4	< 3.4			< 3.4		< 3.4	< 3.4		< 3.4		< 3.4
Aliphatic C10-C44	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
Aliphatic C5-C35	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
Aromatic C5-C7 (benzene)	DETSC 3321*	0.01	mg/kg	57	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C7-C8 (tolene)	DETSC 3321*	0.01	mg/kg	120	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	51	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	74	LQM/CIEH S4UL 2015	< 0.9	< 0.9			< 0.9		< 0.9	< 0.9		< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	130	LQM/CIEH S4UL 2015	< 0.5	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	260	LQM/CIEH S4UL 2015	< 0.6	< 0.6			< 0.6		< 0.6	< 0.6		< 0.6		< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	1600	LQM/CIEH S4UL 2015	< 1.4	< 1.4			< 1.4		< 1.4	< 1.4		< 1.4		< 1.4
Aromatic C35-C44	DETSC 3072*	1.4	mg/kg	1600	LQM/CIEH S4UL 2015	< 1.4	< 1.4			< 1.4		< 1.4	< 1.4		< 1.4		< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
Aromatic C10-C44	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
Ali/Aro C10-C44	DETSC 3072*	10	mg/kg			< 10	< 10			< 10		< 10	< 10		< 10		< 10
Benzene	DETSC 3321#	0.01	mg/kg	0.18	DEFRA C4SL 2014	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	91	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	120	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	490	LQM/CIEH S4UL 2015	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
MTBE	DETSC 3321	0.01	mg/kg	90	CL:AIRE GAC 2010	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01		< 0.01		< 0.01
PAHs				GACs for 6% SOM													
Naphthalene	DETSC 3301	0.1	mg/kg	24	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	160	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	200	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	160	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	90	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	2200	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	290	LQM/CIEH S4UL 2015	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	0.6	< 0.1	< 0.1	< 0.1	0.2	0.2
Pyrene	DETSC 3301	0.1	mg/kg	620	LQM/CIEH S4UL 2015	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	1.1	0.9	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	13	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	19	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	3.9	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	130	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	5.7	DEFRA C4SL 2014	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	39	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.43	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	640	LQM/CIEH S4UL 2015	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg			< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	4.0	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs																	
PCB 77	DETSC 3401*	0.01	mg/kg	0.038	USEPA RSL 2023 (Res. soil)			< 0.01		< 0.01							
PCB 81	DETSC 3401*	0.01	mg/kg	0.012				< 0.01		< 0.01							
PCB 105	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 114	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 118	DETSC 3401#	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 123	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 126	DETSC 3401*	0.01	mg/kg	0.000036				< 0.01		< 0.01							
PCB 156	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 157	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 167	DETSC 3401*	0.01	mg/kg	0.12				< 0.01		< 0.01							
PCB 169	DETSC 3401*	0.01	mg/kg	0.00012				< 0.01		< 0.01							
PCB 189	DETSC 3401*	0.01	mg/kg	0.13				< 0.01		< 0.01							

DETS Job No. 23-22842
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Soil Contamination Screening Assessment for Human Health

						Southwestern Part of Site						Arable Fields					
Lab No			**GAC (Allotments)**	**Source of GACs**		2238783	2238784	2238785	2238786	2238788	2238789	2238790	2238791	2238792	2238793	2238794	2238795
Sample ID						WS01	WS01	WS01	WS01	WS02	WS02	WS03	WS04	WS04	WS04	WS04	WS05
Depth						0.05-0.30	0.30-0.70	0.70-1.00	1.00-1.80	0.04-0.27	0.27-1.00	0.01-0.40	0.01-0.31	0.31-2.30	0.70-1.20	1.20-2.30	0.01-0.47
Other ID						MG	MG	MG	Nat.	MG	MG	MG	MG	Nat.	Nat.	Nat.	MG
Sample Type						SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date						21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Sampling Time						n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**														
Phenols				GACs for 6% SOM													
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	1500	LQM/CIEH S4UL 2015		< 0.3	< 0.3	0.5	< 0.3	< 0.3					< 0.3	
OCPs																	
alpha-BHC	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
beta-BHC	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
delta-BHC	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Heptachlor	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Aldrin	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
gamma-Chlordane	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
4,4-DDE	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Dieldrin	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endrin	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endrin aldehyde	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
4,4-DDT	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Methoxychlor	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Endrin ketone	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
OPPs																	
Dichlorvos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Mevinphos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Demeton-O	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Ethoprop	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Naled	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Phorate	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Demeton-S	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Diazinon	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Disulfoton	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Methylparathion	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Ronnel	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Fenthion	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Chlopyrifos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Trichlorinate	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Merphos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Stirofos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Tokuthion	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Fensulfothion	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Bolstar	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Azinphos methyl	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							
Coumaphos	DETSC 3433*	0.1	mg/kg					< 0.1		< 0.1							

DETS Job No. 23-22842
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Soil Contamination Screening Assessment for Human Health

				GAC (Allotments)	Source of GACs		
			Lab No			2238785	2238789
			Sample ID			WS01	WS02
			Depth			0.70-1.00	0.27-1.00
			Other ID				
			Sample Type			SOIL	SOIL
			Sampling Date			21/09/2023	21/09/2023
			Sampling Time			n/s	n/s
Test	**Method**	**LOD**	**Units**				
VOCs							
Vinyl Chloride	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg			< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg			< 0.01	< 0.01

DETS Job No. 23-22842
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Soil Contamination Screening Assessment for Human Health

				GAC (Allotments)	Source of GACs	2238785	2238789
			Lab No			2238785	2238789
			Sample ID			WS01	WS02
			Depth			0.70-1.00	0.27-1.00
			Other ID				
			Sample Type			SOIL	SOIL
			Sampling Date			21/09/2023	21/09/2023
			Sampling Time			n/s	n/s
Test	**Method**	**LOD**	**Units**				
SVOCs							
Phenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1

APPENDIX F

Controlled Waters Screening Assessment

DETS Job Nos. 23-24003, 23-23289 & 23-23548
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Controlled Waters Screening Assessment

				Lab No	GAC	2245587	2245588	2241372	2241373	2242780
				Sample ID		WS01	WS01	SW01	SW02	WS01
				Depth		0.70-1.00	1.00-1.80	0.30		1.99-2.58
				Other ID				Pond	East Hill Beck	
				Sample Type		LEACHATE	LEACHATE	SW	SW	GW
				Sampling Date		21/09/2023	21/09/2023	26/09/2023	26/09/2023	02/10/2023
				Sampling Time		n/s	n/s	10:40	11:15	11:51
Test	**Method**	**LOD**	**Units**							
Preparation										
BS EN 12457 10:1	DETSC 1009					Y	Y			
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	10[1]			1.2	0.26	0.69	
Boron, Dissolved	DETSC 2306*	12	ug/l	1000[1]			64	28	100	
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	5[1]			< 0.03	< 0.03	< 0.03	
Chromium, Dissolved	DETSC 2306	0.25	ug/l	50[1]			0.71	0.59	1.0	
Copper, Dissolved	DETSC 2306	0.4	ug/l	2000[1]			3.3	2.2	1.8	
Lead, Dissolved	DETSC 2306	0.09	ug/l	10[1]		0.45		0.10	< 0.09	0.33
Mercury, Dissolved	DETSC 2306	0.01	ug/l	1[1]				< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	20[1]				1.8	4.0	1.6
Selenium, Dissolved	DETSC 2306	0.25	ug/l	10[1]				0.30	0.36	0.29
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3000[2]				43	59	190
Inorganics										
pH	DETSC 2008		pH	6.5-10[1]				6.9	6.6	5.2
Conductivity	DETSC 2009	1	uS/cm	2500[7]				479	306	71.1
Biochemical Oxygen Demand, Total	DETSC 2031	1	mg/l	<5[8]				1.2	3.5	3.1
Cyanide, Total Low Level	DETSC 2131	0.1	ug/l	50[1]				0.4	0.9	0.2
Thiocyanate	DETSC 2130	20	ug/l	4[9]			<20	< 20	< 20	< 20
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.5[1]				0.13	< 0.015	2.8
Chloride	DETSC 2055	0.1	mg/l	250[1]				63	12	9.8
Sulphate as SO4	DETSC 2055	0.1	mg/l					25	35	19
Sulphide	DETSC 2208	10	ug/l					20	< 10	42
Sulphur as S, Total	DETSC 2320*	10	mg/l					< 10	14	< 10
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	15,000[6]				< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	15,000[6]				< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	300[6]				< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	300[6]				< 1.0	< 1.0	1.3
Aliphatic C12-C16	DETSC 3072*	1	ug/l	300[6]				< 1.0	< 1.0	16
Aliphatic C16-C21	DETSC 3072*	1	ug/l					< 1.0	< 1.0	46
Aliphatic C21-C35	DETSC 3072*	1	ug/l					< 1.0	< 1.0	< 1.0
Aliphatic C35-C44	DETSC 3072*	1	ug/l					< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l					< 10	< 10	64
Aliphatic C10-C44	DETSC 3072*	1	ug/l					< 1.0	< 1.0	64
Aromatic C5-C7	DETSC 3322	0.1	ug/l	10[6]				< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	700[6]				< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	800[6]				< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	90[6]				< 1.0	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	90[6]				< 1.0	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	90[6]				< 1.0	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	90[6]				< 1.0	< 1.0	< 1.0
Aromatic C35-C44	DETSC 3072*	1	ug/l					< 1.0	< 1.0	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l					< 10	< 10	< 10
Aromatic C10-C44	DETSC 3072*	1	ug/l					< 1.0	< 1.0	< 1.0
Ali/Aro C10-C44	DETSC 3072*	1	ug/l					< 1.0	< 1.0	64
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l					< 10	< 10	65
Benzene	DETSC 3322	1	ug/l	10[6]				< 1.0	< 1.0	< 1.0
Toluene	DETSC 3322	1	ug/l	700[6]				< 1.0	< 1.0	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	300[6]				< 1.0	< 1.0	< 1.0
Xylene	DETSC 3322	1	ug/l	500[6]				< 1.0	< 1.0	< 1.0
MTBE	DETSC 3322	1	ug/l	15[10]				< 1.0	< 1.0	< 1.0
Phenol - Monohydric	DETSC 2131	0.0015	mg/l	0.0077[5]				0.0095	0.0057	0.024

DETS Job Nos. 23-24003, 23-23289 & 23-23548
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Controlled Waters Screening Assessment

			Lab No		2245587	2245588	2241372	2241373	2242780
			Sample ID		WS01	WS01	SW01	SW02	WS01
			Depth		0.70-1.00	1.00-1.80	0.30		1.99-2.58
			Other ID	**GAC**			Pond	East Hill Beck	
			Sample Type		LEACHATE	LEACHATE	SW	SW	GW
			Sampling Date		21/09/2023	21/09/2023	26/09/2023	26/09/2023	02/10/2023
			Sampling Time		n/s	n/s	10:40	11:15	11:51
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3304	0.05	ug/l	2.4[5]			< 0.05	< 0.05	< 0.50
Acenaphthylene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Acenaphthene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Fluorene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Phenanthrene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	0.35
Anthracene	DETSC 3304	0.01	ug/l	0.4[4]			< 0.01	< 0.01	< 0.10
Fluoranthene	DETSC 3304	0.01	ug/l	1[4]			< 0.01	< 0.01	< 0.10
Pyrene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l				< 0.01	< 0.01	< 0.10
Chrysene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.1[1]			< 0.01	< 0.01	< 0.10
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	(Combined)			< 0.01	< 0.01	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.01[1]			< 0.01	< 0.01	< 0.10
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l				< 0.01	< 0.01	< 0.10
PAH Total	DETSC 3304	0.2	ug/l				< 0.20	< 0.20	< 2.00
PCBs									
PCB 77	DETSC 3402	0.3	ug/l				< 0.3	< 0.3	< 0.3
PCB 81	DETSC 3402	0.2	ug/l				< 0.2	< 0.2	< 0.2
PCB 105	DETSC 3402	0.2	ug/l				< 0.2	< 0.2	< 0.2
PCB 114	DETSC 3402	0.3	ug/l				< 0.3	< 0.3	< 0.3
PCB 118 + PCB 123	DETSC 3402	0.6	ug/l				< 0.6	< 0.6	< 0.6
PCB 126	DETSC 3402	0.5	ug/l				< 0.5	< 0.5	< 0.5
PCB 156	DETSC 3402	0.3	ug/l				< 0.3	< 0.3	< 0.3
PCB 157	DETSC 3402	0.2	ug/l				< 0.2	< 0.2	< 0.2
PCB 167	DETSC 3402	0.3	ug/l				< 0.3	< 0.3	< 0.3
PCB 169	DETSC 3402	0.2	ug/l				< 0.2	< 0.2	< 0.2
PCB 189	DETSC 3402	0.3	ug/l				< 0.3	< 0.3	< 0.3
PCB 12	DETSC 3402	1	ug/l				< 1.0	< 1.0	< 1.0

DETS Job Nos. 23-24003, 23-23289 & 23-23548
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Controlled Waters Screening Assessment

				Lab No	GAC	2245587	2245588	2241372	2241373	2242780
				Sample ID		WS01	WS01	SW01	SW02	WS01
				Depth		0.70-1.00	1.00-1.80	0.30		1.99-2.58
				Other ID				Pond	East Hill Beck	
				Sample Type		LEACHATE	LEACHATE	SW	SW	GW
				Sampling Date		21/09/2023	21/09/2023	26/09/2023	26/09/2023	02/10/2023
				Sampling Time		n/s	n/s	10:40	11:15	11:51
Test	**Method**	**LOD**	**Units**							
OCPs										
alpha-BHC	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
gamma-BHC (Lindane)	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
beta-BHC	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
delta-BHC	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Heptachlor	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Aldrin	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Heptachlor epoxide	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
gamma-Chlordane	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endosulphan I	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4,4-DDE	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Dieldrin	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endrin	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endosulphan II	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endrin aldehyde	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4,4-DDT	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endosulphan sulphate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Methoxychlor	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Endrin ketone	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
OPPs										
Dichlorvos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Mevinphos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Demeton-O	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Ethoprop	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Naled	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Phorate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Demeton-S	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Diazinon	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Disulfoton	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Methylparathion	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Ronnel	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Fenthion	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Chlopyrifos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Trichlorinate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Merphos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Stirofos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Tokuthion	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Fensulfothion	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Bolstar	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Azinphos methyl	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Coumaphos	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0

DETS Job Nos. 23-24003, 23-23289 & 23-23548
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Controlled Waters Screening Assessment

				Lab No	GAC	2245587	2245588	2241372	2241373	2242780
				Sample ID		WS01	WS01	SW01	SW02	WS01
				Depth		0.70-1.00	1.00-1.80	0.30		1.99-2.58
				Other ID				Pond	East Hill Beck	
				Sample Type		LEACHATE	LEACHATE	SW	SW	GW
				Sampling Date		21/09/2023	21/09/2023	26/09/2023	26/09/2023	02/10/2023
				Sampling Time		n/s	n/s	10:40	11:15	11:51
Test	**Method**	**LOD**	**Units**							
VOCs										
Dichlorodifluoromethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Chloromethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Vinyl Chloride	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Bromomethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Chloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Trichlorofluoromethane	DETSC 3432*	1	ug/l				< 1	< 1	< 1	
1,1-dichloroethylene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Methylene Chloride	DETSC 3432*	27	ug/l	11[9]			< 27	< 27	< 27	
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1-dichloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
2,2-dichloropropane	DETSC 3432*	2	ug/l				< 2	< 2	< 2	
Bromochloromethane	DETSC 3432	4	ug/l				< 4	< 4	< 4	
Chloroform	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1,1-trichloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1-dichloropropene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Carbon tetrachloride	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Benzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2-dichloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Trichloroethylene	DETSC 3432*	1	ug/l				< 1	< 1	< 1	
1,2-dichloropropane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Dibromomethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Bromodichloromethane	DETSC 3432	4	ug/l				< 4	< 4	< 4	
cis-1,3-dichloropropene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Toluene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
trans-1,3-dichloropropene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1,2-trichloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Tetrachloroethylene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,3-dichloropropane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Dibromochloromethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2-dibromoethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Chlorobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Ethylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
m+p-Xylene	DETSC 3432	2	ug/l				< 2	< 2	< 2	
o-Xylene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Styrene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Bromoform	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Isopropylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Bromobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2,3-trichloropropane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
n-propylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
2-chlorotoluene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
4-chlorotoluene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Tert-butylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
sec-butylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
p-isopropyltoluene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,3-dichlorobenzene	DETSC 3432	2	ug/l				< 2	< 2	< 2	
1,4-dichlorobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
n-butylbenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2-dichlorobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
Hexachlorobutadiene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l				< 1	< 1	< 1	
MTBE	DETSC 3432*	1	ug/l				< 1	< 1	< 1	

DETS Job Nos. 23-24003, 23-23289 & 23-23548
Client: Wavin UK Ltd
Client Project Name: Bromley Farm Extension, Cumberworth Lane
Client Project Ref: 22007

Controlled Waters Screening Assessment

				Lab No		2245587	2245588	2241372	2241373	2242780
				Sample ID		WS01	WS01	SW01	SW02	WS01
				Depth		0.70-1.00	1.00-1.80	0.30		1.99-2.58
				Other ID	**GAC**			Pond	East Hill Beck	
				Sample Type		LEACHATE	LEACHATE	SW	SW	GW
				Sampling Date		21/09/2023	21/09/2023	26/09/2023	26/09/2023	02/10/2023
				Sampling Time		n/s	n/s	10:40	11:15	11:51
Test	**Method**	**LOD**	**Units**							
SVOCs										
Phenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Aniline	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2-Chlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Benzyl Alcohol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2-Methylphenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
3&4-Methylphenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,4-Dimethylphenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,4-Dichlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2-Nitroaniline	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
3-Nitroaniline	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4-Nitrophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Dibenzofuran	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Diethylphthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4-Nitroaniline	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Diphenylamine	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Hexachlorobenzene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Pentachlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Dimethylphthalate	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Azobenzene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
Carbazole	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l					< 1.0	< 1.0	< 5.0

Notes
1. Water Supply (Water Quality) Regulations 2018 (UK drinking water standards)
2. Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996
3. Environment Agency Environmental Quality Standards in Appendix A to H1 Annex D-basic surface water discharges v2.2 2011
4. MAC-EQS for inland surface waters
5. AA-EQS for surface water quality
6. WHO Guidelines for Drinking Water Quality, 2008
7. Drinking Water Directive
8. Surface Water Directive
9. USEPA RSL for tapwater 2023
10. Drinking Water Inspectorate, London, 2006

APPENDIX G

Gas & Groundwater Monitoring Results

SILKSTONE ENVIRONMENTAL GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS A PHENNA GROUP COMPANY	**Project:** **Bromley Farm Quarry Extension, Lower Cumberworth**	**Client:** **Wavin UK (Holdings) Ltd**	**Contract No:** **22007**

GAS AND GROUNDWATER MONITORING RECORD

		Gas Readings										
Hole ID	Date	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	LEL (%)	Flow (l/hr)	Relative Pressure (mb)	Ambient Pressure (mb)	Pressure Trend	Water Level (mBGL)	Base of Hole (mBGL)	Remarks
WS01	26/09/2023	17.5	3.2	0.1	2.0	<0.1	-0.07	984	Falling	1.90	2.61	Zero CO & H_2S
	02/10/2023	16.4	4.8	0.2	4.0	0.2	0.03	993	Falling	1.99	2.58	Zero CO & H_2S
	16/10/2023	16.0	4.6	<0.1	0.0	0.1	0.03	972	Slight decline (stable)	1.92	2.60	Zero CO & H_2S
	31/10/2023	17.6	2.8	<0.1	0.0	0.3	0.09	974	Stable	1.17	2.61	Zero CO & H_2S
	16/11/2023	14.1	6.1	<0.1	0.0	0.2	0.07	988	Stable	1.56	2.61	Zero CO & H_2S
	12/12/2023	18.3	3.5	<0.1	0.0	0.1	0.07	971	Falling	1.31	2.62	Zero CO & H2S
WS02	26/09/2023	19.5	1.4	<0.1	0.0	0.2	-0.04	984	Falling	Dry	1.12	Zero CO & H_2S
	02/10/2023	19.9	1.6	0.1	2.0	0.1	-0.02	992	Falling	1.10	1.14	Zero CO & H_2S
	16/10/2023	18.1	3.2	<0.1	0.0	0.1	0.00	972	Slight decline (stable)	1.05	1.12	Zero CO & H_2S
	31/10/2023	18.8	1.8	<0.1	0.0	0.4	2.59	973	Stable	0.69	1.15	Zero CO & H_2S
	16/11/2023	20.5	0.8	<0.1	0.0	0.2	0.05	988	Stable	0.99	1.15	Zero CO & H_2S
	12/12/2023	20.8	0.7	<0.1	0.0	0.2	0.10	971	Falling	0.64	1.16	Zero CO & H2S
WS04	26/09/2023	15.6	4.1	<0.1	0.0	<0.1	-0.03	984	Falling	Dry	2.74	Zero CO & H_2S
	02/10/2023	20.0	1.1	0.1	2.0	0.1	-0.07	993	Falling	Dry	2.74	Zero CO & H_2S
	16/10/2023	21.9	0.3	0.1	2.0	0.1	0.09	972	Slight decline (stable)	2.67	2.72	Zero CO & H_2S
	31/10/2023	15.7	3.3	<0.1	0.0	<0.1	0.03	973	Stable	1.12	2.77	Zero CO & H_2S
	16/11/2023	12.5	4.4	<0.1	0.0	0.2	0.02	989	Stable	2.30	2.76	Zero CO & H_2S
	12/12/2023	14.2	4.7	<0.1	0.0	0.1	0.07	971	Falling	1.21	2.70	Zero CO & H2S

SILKSTONE ENVIRONMENTAL LTD

Gas Monitoring Record | **Sheet 1 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend: Falling
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Slight overcast, sunny, light breeze	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		26/09/2023	11:40	0.1	0.1	21.2	<0.1	0	0	15	984	-	-	2 mins duration.
WS01		26/09/2023	11:42	0.1	3.2	17.5	1.2	0	0	15	984	<0.1	-0.07	2 mins duration.
WS02		26/09/2023	11:55	<0.1	1.4	19.5	1.4	0	0	15	984	0.2	-0.04	2 mins duration.
WS04		26/09/2023	12:06	<0.1	4.1	15.6	8.2	0	0	16	984	<0.1	-0.03	2 mins duration.

Notes:

SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

SILKSTONE ENVIRONMENTAL LTD

Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Slight overcast, sunny, light breeze

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		26/09/2023	11:45			1.90	2.61	0.71	N		2litres purged before becoming dry, black water with black fragments (assumed coal), no odour, no sheen.
WS02		26/09/2023	11:58			Dry	1.12	0.00	N		
WS04		26/09/2023	12:10			Dry	2.74	0.00	N		

Notes:

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SILKSTONE ENVIRONMENTAL LTD

Gas Monitoring Record | **Sheet 2 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend: Falling
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Slight overcast, breezy, dry	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		02/10/2023	11:42	0.1	0.1	21.4	<0.1	0	0	14	993	-	-	2 mins duration.
WS01		02/10/2023	11:48	0.2	4.8	16.4	16.9	0	0	14	993	0.2	0.03	2 mins duration.
WS02		02/10/2023	12:11	0.1	1.6	19.9	3.2	0	0	14	992	0.1	-0.02	2 mins duration.
WS04		02/10/2023	12:19	0.1	1.1	20.0	2.1	0	0	14	993	0.1	-0.07	Gas bung found to be missing and was replaced just before monitoring conducted. 2 mins duration.

Notes:

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SILKSTONE ENVIRONMENTAL LTD

Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Slight overcast, breezy, dry

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		02/10/2023	11:51			1.99	2.58	0.59	Y		Manually pumped directly into sample containers. Translucent light brown to brown water for the first litre and black water with coal particles within thereafter.
WS02		02/10/2023	12:14			1.10	1.14	0.04	N		
WS04		02/10/2023	12:23			Dry	2.74	0.00	N		

Notes: No visual or olfactory signs noted.

SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

SILKSTONE ENVIRONMENTAL LTD

Gas Monitoring Record | **Sheet 3 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend: Slight decline (stable)
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Rain, overcast, windy	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		16/10/2023	12:25	<0.1	0.1	21.1	<0.1	0	0	11	972	-	-	2 mins duration.
WS01		16/10/2023	12:36	<0.1	4.6	16.0	15.1	0	0	11	972	0.1	0.03	2 mins duration.
WS02		16/10/2023	12:49	<0.1	3.2	18.1	13.2	0	0	11	972	0.1	0.00	2 mins duration.
WS04		16/10/2023	12:27	0.1	0.3	21.9	3.4	0	0	11	972	0.1	0.09	2 mins duration.

Notes:

SILKSTONE ENVIRONMENTAL
GEOTECHNICAL, PLANNING & SURVEYING CONSULTANTS
A PHENNA GROUP COMPANY

SILKSTONE ENVIRONMENTAL LTD

Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: P Stewart	Weather Conditions: Rain, overcast, windy

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		16/10/2023	12:14			1.92	2.60	0.68	N		
WS02		16/10/2023	12:54			1.05	1.12	0.07	N		
WS04		16/10/2023	12:31			2.67	2.72	0.05	N		

Notes: No visual or olfactory signs noted.

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Gas Monitoring Record | **Sheet 4 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend: Stable
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown	Weather Conditions: Heavy rain/ Foggy/ Cold	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		31/10/2023	14:00	<0.1	<0.1	21.9	-	0	0	9	974	-	-	2 mins duration.
WS01		31/10/2023	14:15	<0.1	2.8	17.6	13.1	0	0	9	974	0.3	0.09	2 mins duration.
WS02		31/10/2023	14:25	<0.1	1.8	18.8	8.2	0	0	9	973	0.4	2.59	2 mins duration.
WS04		31/10/2023	14:41	<0.1	3.3	15.7	21.5	0	0	9	973	<0.1	0.03	2 mins duration.

Notes:

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Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown	Weather Conditions: Heavy rain/ Foggy/ Cold

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		31/10/2023	14:18			1.17	2.61	1.44	N		
WS02		31/10/2023	14:28			0.69	1.15	0.46	N		
WS04		31/10/2023	14:44			1.12	2.77	1.65	N		

Notes: No visual or olfactory signs noted.

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Gas Monitoring Record | **Sheet 5 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown	Weather Conditions:Overcast/ Cool/ Light breeze	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		16/11/2023	15:05	<0.1	0.1	21.9	-	0	0	8	988	-	-	2 mins duration.
WS01		16/11/2023	15:17	<0.1	6.1	14.1	26.3	0	0	8	988	0.2	0.07	2 mins duration.
WS02		16/11/2023	15:10	<0.1	0.8	20.5	1.2	0	0	8	988	0.2	0.05	2 mins duration.
WS04		16/11/2023	15:26	<0.1	4.4	12.5	3.6	0	0	8	989	0.2	0.02	2 mins duration.

Notes:

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Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown	Weather Conditions: Overcast/ Cool/ Light breeze

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		16/11/2023	15:21			1.56	2.61	1.05	N		
WS02		16/11/2023	15:14			0.99	1.15	0.16	N		
WS04		16/11/2023	15:30			2.30	2.76	0.46	N		

Notes: No visual or olfactory signs noted.

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Gas Monitoring Record | **Sheet 6 of 6**

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Equipment: Geotechnical Instruments GA 5000	Pressure Trend: Falling
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown/ E Jackon	Weather Conditions:Foggy/ Wet Ground/ Cold	

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	CH_4 (in %)	CO_2 (in %)	O_2 (in %)	N_2 (in %)	H2S (ppm)	CO (ppm)	Temp (^oC)	Atmos. Pressure (mb)	Flow (l/h)	Rel. Pressure (mb)	Comments
Background		12/12/2023	10:15	<0.1	<0.1	20.9	-	0	0	3	971	-	-	2 mins duration.
WS01		12/12/2023	10:28	<0.1	3.5	18.3	9.0	0	0	3	971	0.1	0.07	2 mins duration.
WS02		12/12/2023	10:18	<0.1	0.7	20.8	0.0	0	0	3	971	0.2	0.10	2 mins duration.
WS04		12/12/2023	10:37	<0.1	4.7	14.2	27.0	0	0	3	971	0.1	0.07	2 mins duration.

Notes:

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Borehole Waters Monitoring Record

Site Name: Bromley Farm Quarry Extension, Lower Cumberworth	Project Ref. 22007	Survey Reference:
Client: Wavin UK (Holdings) Ltd	Survey Personnel: R Drown/ E Jackon	Weather Conditions: Overcast/ Cool/ Light breeze

Monitoring Point	Description / Grid Ref.	Date (DD/MM/YY)	Time HH:MM	Surface Level M AOD	Cover Level M AOD	Depth to Water M bgl	Depth to Base M bgl	Water Head M	Sample Taken Y/N	Water Level M AOD	Comments
WS01		12/12/2023	10:31			1.31	2.62	1.31	N		
WS02		12/12/2023	10:21			0.64	1.16	0.52	N		
WS04		12/12/2023	10:40			1.21	2.70	1.49	N		

Notes: No visual or olfactory signs noted.

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