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DATA ACQUISITION
CONSULTANCY

Phase 2 Intrusive Site Investigation Report

LOCATION	Land at Boothroyd Lane, Dewsbury, WF12 2LF
ISSUE DATE	October 2025, Revised May 2026
FOR	Horizon Healthcare Homes Ltd
CLIENT REF.	
OUR REF.	G25193b

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1. Introduction

In accordance with your instruction, Geoinvestigate Limited has carried out an intrusive site investigation at the land at Boothroyd Lane, Dewsbury, WF13 2LF.

A Phase 1 Desk Study has previously been completed by Geoinvestigate Limited (G25193, June 2025). The most pertinent findings of the desk study comprised the following:

Site Suitability	Desk Study Finding	Preliminary Assessment
Normal Foundations	Shallow rock anticipated, but some fill may be present from former buildings onsite. Risk of shallow mine-workings may require foundation mitigation or drilling and grouting	Possibly suitable
Soakaways	Shallow rock unlikely to offer sufficient permeability.	Unlikely to be suitable

Potential Risks	Desk Study Finding	Preliminary Risk Assessment
Radon Gas	Between 3% and 5% of properties affected	Low to Moderate
Chemical Contamination	Historical nearby and on-site land uses potentially giving rise to a range of inorganic and organic contaminants including asbestos, metals/metalloids, PAHs and petroleum hydrocarbons.	Low to Moderate
Hazardous Gas	Potential for hazardous gas to be generated in made/infilled ground deposits and shallow mining / mineshafts.	Moderate
Ground Instability/ subsidence	Potential for vegetation influence on shrink-swell clays which may be present, including risk of soil heave.	Low
	Potential for significant deposits of compressible made/infilled ground.	Low to Moderate
Ground Instability/ subsidence	Potential for unrecorded shallow coal mining.	Moderate to High

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

A Coal Mining Risk Assessment CMRA has been carried out by Geoinvestigate Limited (G25193, June 2025) which reported that the site is underlain within very shallow depth (< 10m), or shallow depth (< 30m) by the Flockton Thin (FN) Coal, in turn underlain by the First Brown then Second Brown Metal Coals.

Nearby BGS borehole log SE22SW/813 presented in Appendix E records drift/bedrock depth of 1.90m while logs SE22SW/807and 806 some 50m and 70m west of the site, record intact 0.97m thick coal at 8.43m and mine void (0.46m) at 8m depth respectively with a further narrow horizon of coal (0.36m) at 17m and (0.30m) at 16m with no further coal horizons noted below this to 30m depth. In Geoinvestigate's opinion, it is likely that the coal and mine workings at 8m depth are within in the Flockton Thin Coal and similar coal seam depth and/or underground workings are to be expected to be present beneath the Care Home development area. However, no workings are anticipated in the thinner coal at 16m to 17m depth.

What is presumed to be shaft 423421-03 identified in the CA report, some 30m west of the site was encountered in BGS borehole SE22SW/804 which records 11.5m of shaft infill. Allowing for a 2m deep

water collection sump at the bottom of the shaft places the top of seam workings in the Flockton Thin Coal horizon connecting with the shaft at around 8.5m depth, adjacent to the development area.

It is proposed to construct a new residential care home development at the site with associated soft landscaping (including private gardens) and hardstanding access roads and parking. The boundary of the current study area and the proposed developmental layout are presented on the site plan included within Appendix 1 of this report.

The purpose of this Phase 2 investigation has been to establish the true nature of the ground conditions at the site with regard to the potential contamination, hazardous gas and geotechnical risks that have been identified during preliminary research, and to determine appropriate foundation solutions for the proposed new structure(s).

The report is carried out generally in accordance with BS 10175 (2011) and Land Contamination Risk Management (LCRM, 2020), and presents factual records of the site work, the ground conditions encountered and laboratory test results.

The recommendation, interpretation and summary expressed in this report are based on the strata observed in the exploratory holes. No responsibility is taken for conditions that have not been revealed by the exploratory holes, or which occur between them. Whilst every effort has been made to interpret the conditions between investigation locations, such information is only indicative, and liability cannot be accepted for its accuracy.

2. Scope of Phase 2 Investigation

2.1 Scope of Works

Given the above, the following investigation was carried out to assess the potential risks to the proposed development:

- Eight (8) boreholes (ref. BH1 to BH8) were undertaken at the site to depths of between 01.30m and 2.70m below ground level (bgl) with associated soil sampling, logging and supervision of the works by a suitably qualified geo-environmental engineer / technician. The boreholes were commenced using windowless sampling techniques with an Archway Dart mini drilling rig.

- Three (3) rotary open hole boreholes (ref. RH1 to RH3) undertaken to depths 30.00mbgl under licence from the Coal Authority to probe for shallow mine workings. The boreholes were commenced using the Geoinvestigate Microdrill® system with water flush. The initial boreholes were carried out under Permit number 30113

- A further twelve (12) rotary open hole boreholes (ref. RH4 to RH15) undertaken to depths 15.00mbgl under licence from the Coal Authority to probe for shallow mine workings. The boreholes were commenced using the Geoinvestigate Microdrill® system with water flush. These were carried out under Permit number 30291.

- The installation of three (3) ground gas monitoring wells in boreholes BH1, BH5 and BH6 with allowance for up to six (6) gas monitoring visits over a period of up to three (3) months (if appropriate), including readings below 1000mb and where possible following a sharp drop in atmospheric pressure.

- Dynamic cone penetrometer testing was undertaken in three (3) locations (CBR1 to CBR3) within the proposed car parking area to provide indicative California Bearing Ratio (CBR) information for road design.

- Geotechnical testing comprising forty-four (44) moisture content determinations, six (6) Atterberg Limit plasticity tests, and a number of water-soluble sulphate concentrations and pH tests to allow suitable foundations and concrete design advice, including assessment of the shrinkage potential of any clay soils.

- Contamination analyses of six (6) samples of topsoil and made ground recovered at depths of between 0.20m and 1.00m. Analysis was variably undertaken for a general suite of potential metal/metalloid contaminants, polycyclic aromatic hydrocarbons (PAHs), asbestos, and petroleum hydrocarbons (including BTEX*). Chemical analyses were based on the attending engineer's assessment of soils and ground conditions at the site together with desk study findings. Leachate from two (2) of these samples was tested to check the mobility of potential contaminants.
  *Benzene, toluene, ethyl benzene and xylenes

- Provision of a factual and interpretative report including site plan, borehole logs, trial pit logs, geotechnical and contamination soil analysis results, ground gas monitoring results, water infiltration testing results, advice on the contamination, gas and the coal mining situation at the site, appropriate foundation advice, and advice regarding any remediation and validation works that may be necessary.

The trial pit and borehole positions are shown on the plan provided in Appendix 1.

The excavations were sampled and logged at site by a geoenvironmental engineer and the ground conditions encountered are described on the trial pit and borehole logs also provided in Appendix 1.

The results of geotechnical soil testing and soil moisture profiles are included in Appendix 2, together with the DCP test results sheets.

The results of the contamination testing are included in Appendix 3 (Eurofins Chemtest Ltd. report no. 25-23864).

2.2 Sampling Rationale

The borehole positions were chosen to give an indication of the ground conditions generally throughout the site, both in terms of geotechnical appraisal and assessment of soil contamination. The soils encountered in the boreholes are considered to be broadly representative of soils throughout the site. The hand excavated trial pit positions were specifically chosen to target proposed areas of soft landscaping or gardens.

3. Phase 2 Investigation Findings

3.1 Ground Conditions

3.1.1 Windowless Sample Boreholes

The ground conditions were relatively uniform across the site and comprised topsoil underlain by natural strata predominantly comprising siltstone.

BH2, BH5, BH6, BH7 & BH8 the topsoil was underlain by clay to depths of between 0.80m and 1.15mbgl before siltstone was encountered.

The made ground was present in BH4 and BH8 to depths of 1.10m and 0.80m respectively. This comprised sandy gravelly clay fill with gravel constituents of concrete, brick plastic and sandstone.

Hand shear vane tests returned values between 64kN/m^2 and 130kN/m^2 in the upper clay stratum at depths of between 0.50m and 1.00m, indicating generally firm to very stiff conditions.

Standard Penetration Tests (SPTs) were undertaken commencing at 1m intervals throughout the boreholes. Within the made ground, SPT N_{300} values were between N=17 and N=54 were recorded, indicating generally medium dense to dense conditions. Conversely tests in the natural granular soils retuned N values of between N=15 and N=>50, indicating generally medium dense to very dense conditions.

No ground water was recorded during the works. No significant roots were recovered from the boreholes.

3.1.2 Rotary Open Hole Boreholes

The findings of the CMRA report necessitated that rotary open hole boreholes be sunk at the site as part of this investigation to explore for possible shallow coal and ironstone mine workings. These were drilled using the Geoinvestigate custom-built and trademarked Microdrill system, a lightweight tracked drilling rig which uses water flush.

Fifteen (15) holes were drilled to depths between 15.00m (RH4 to RH15) and 30.00m (RH1 to RH3) and logs of the findings of these holes are presented in Appendix 1.

The rock descriptions are tentative and generally based on the contents of returned water flush, drilling progress (speed of advance) and water pressures observed during drilling; no cores were recovered from the boreholes to verify these though at several times during excavation the drill-string is withdrawn from the ground to inspect the composition of the build-up on the drill bit.

Gas readings were taken in the boreholes during and following drilling. These are shown on the logs in Appendix 1 (no hazardous gas concentrations were detected).

3.1.3 Site Mining Background

Further to the information within the CMRA summarised in section 1, a previous drilling investigation to the west of the site and Boothroyd Lane identified the presence of an 11m deep mine shaft 40m from the

new building, a 0.45m high mine void between 8.04-8.50m some 80m west, a 0.95m thick intact shaley COAL and carbonaceous SHALE horizon between 8.43-9.40mbgl 50m west and a lower horizon of thin (0.30-0.36m thick) intact shaley COAL and carbonaceous SHALE between 16.00-17.40m. The upper coal is presumed to be the Flockton Thin Coal (FN) and the lower the 1st Brown Metal Coal (1BM).

According to an AI web source, historically some of the narrowest coal seams mined in the UK were as thin as 12 to 14 inches. Miners often worked these tiny spaces while lying on their side. Historically the narrowest coal seams mined in the Dewsbury area likely included the Flockton Thin Seam, which was described as being small and difficult to work. The Flockton Thin coal seam in the Dewsbury area is approximately 0.3m to 0.4m thick (about 15 inches), with some regional variation noted in geological records. For example, Kirklees Council boreholes within this seam note it to be around this thickness, though there can be significant local variations and its thickness can range up to 0.90m.

From previous boreholes descriptions to the west of Boothroyd Lane both coal horizons are considered by Geoinvestigate to be poor quality coals the lower 1BM being of lower quality because of its additional narrowness.

On the basis of these two previous drilling results together with the presence of an 11m deep mine shaft adjacent to the site on the western side of Boothroyd Lane and the initial drilling results of RH1, RH2 and RH3 within the site it was suggested that the upper Flockton Thin coal may have been worked eastwards under the development area and further drilling investigation was required within the site to establish the coal mining geology below the site with more certainty. However initially it was considered unlikely that the thinner 1BM coal below the FN had been mined.

3.1.4 Findings of Rotary Probing Boreholes.

Fifteen (15) rotary probe holes (RH1-RH15) without core recovery were sunk at the site to depths between 15m and 30m around and within the footprint of the new building between 30 June 2025 and 3 October 2025.

The boreholes record superficial strata / bedrock depth mostly at 1.30m increasing, locally at RH9 and RH13, to 1.80m.

The upper FN coal seam expected around 8 to 10mbgl, is absent in several holes, but where there is no evidence of mine working disturbance (e.g. RH3, RH5, RH8, RH10, RH11, RH12 and 14) perhaps suggesting this coal seam is impersistent across the site or it has been removed by total extraction longwall mining with the mine roof let down tight against the mine floor so apart from the absence of the coal the mining horizon is indistinguishable from undisturbed bedrock.

The only physical evidence of possible mining disturbance, attributable to the missing FN coal horizon, was identified in RH8 and RH13, where “very weak sandstone/possible broken ground with lost flush at 8.10m” was noted between 8.20-8.30mbgl in RH8 and in RH13 where “a very weak horizon between 10.60-14.50m” is noted but without the loss of flush. However, the proximity of both boreholes to geological faulting may provide an alternative explanation for these conditions.

The FN coal horizon was encountered in RH4 and RH8 at 11.10m and 10.76m respectively, but was found as a narrow deposit at 0.30m and 0.44m in thickness and its poor quality noted with the latter described as “dark grey and black shaley COAL”. No evidence of mining disturbance was found in either hole with full water flush maintained.

The thinner lower 1BM shaley COAL horizon was recorded intact in most of the 15 holes at depths between 15.40-17.50m with thickness between 0.20-0.80m but typically < 0.40m with two horizons noted in RH10m at 15.40m and 16.70m. No evidence of mining disturbance was found in either horizon.

In Geoinvestigate’s opinion the extended “very weak/soft” zones noted in RH2 between10.50-17.40m and again 21.70-26.40m is likely due to fault disturbance, rather than mining.

No hazardous levels of ground gas were detected in the boreholes.

3.2 Conclusions with Respect to Mining Risk

In summary, the drilling investigation found little evidence of significant mining disturbance of the bedrock strata beneath the development area, likely to lead to significant future surface ground instability. In this regard, the drilling investigation did not find mine voids/cavities, nor evidence of upward mine void migration or bed separation of the roof strata above the suspected mining horizon in the Flockton Thin Coal expected to lie at around 10 to 11mbgl beneath the middle of the new building perhaps reducing to 8m at its western end.

In Geoinvestigate’s opinion the drilling results indicate that the Flockton Coal horizon has been mined beneath the development area at depth between 8m to 11m the seam and workings ranging in thickness from 0.45 to 0.95m with mining likely to be of considerable age. However, conditions that could be considered to give rise to future surface instability namely the presence of open mine voids were not encountered and in any of the holes especially those where coal was absent (presumed mined) and the bedrock condition here and in many places was indistinguishable from undisturbed bedrock.

Based on Geoinvestigate’s conclusions that the Flockton Thin seam has probably been mined beneath the site and the yet generally favourable results of the drilling investigation indicating that mining cavities are absent within very shallow depth beneath the new building, it is Geoinvestigate’s opinion that a reinforced foundation strip and floor solution would provide appropriate mitigation against the low risk of the occurrence of any future significant mining related surface ground movement. This is in preference to a drilling and grouting exercise which in Geoinvestigate’s opinion is likely to achieve little grout penetration.

3.3 Soil Moisture, Plasticity Testing and Vegetation Influence.

Borehole moisture profiles are presented in Appendix 2. The natural strata recorded moisture contents between 3.5% and 28.0%.

Atterberg Limit testing returned Plasticity Indices (PIs) between 14.9% and 19.3%. The cohesive soils are classified as Clay of Low (CL) (CH) Plasticity according to BS 5930. This corresponds to Low Shrinkage Soils (volume change potential) according to NHBC Section 4.2 Building Near Trees.

The moisture profiles indicate that moisture depletion may extend to depths of 0.50m in BH3 and BH8. In addition, roots were recorded within the excavations up to 2.20m. The depletion in BH3 can be assumed to be due to encountering bedrock.

Therefore, given the above, precautions are recommended for new foundations to protect against soil heave.

3.4 Dynamic Cone Penetration (DCP) Test Results

Dynamic Cone Penetrometer testing was undertaken at the three (3) locations. These are referenced DCP1 to DCP3 and were carried out to determine equivalent CBR values for the site.

Results of the DCP testing are presented in Appendix 2 together with calculations of representative CBR values for various strata that these tests encountered.

The lowest CBR value of any of the strata encountered by these tests (which extended to approximately 0.90m below ground level) was 6.9% for the upper 200mm and 22.3% between 200mm and 572mm.

Therefore, a CBR value of 5% for natural material would be a reasonable, conservative value to use for design purposes, but it should be noted that wet or winter weather and site trafficking may detrimentally affect the CBR rating of the soil once works are commenced, and CBR values may vary seasonally and with moisture content.

4. Contamination Testing

The soils most likely to contain contamination were expected to be the made ground deposits, but contamination could feasibly also occur throughout the full thickness of the topsoil and made ground strata which were encountered in the boreholes and trial pits to a maximum depth of 1.10m.

Soils close to surface would be the most relevant regarding human health risk assessment though leachate from the made ground was also considered appropriate to ensure no risk to local ground and surface waters exists through potential contaminant leaching and mobilisation.

Other than the presence of occasional brick and concrete fragments, the made ground showed no obvious visual or olfactory evidence of potential contamination or contaminative materials. However, given the site's history the potential for contamination to have affected the site could not be ruled out without soil analyses.

Based on the findings of the site works, six (6) samples of made ground and natural subsoil from depths of between 0.20m and 0.50m recovered from across the site were tested for a range of substances. These samples were tested for a range of substances, depending on their origin, the requirements of the investigation, and the assessment of the attending engineer. Test suites variably included metals/metalloids, PAHs, asbestos, and petroleum hydrocarbons (including BTEX in some cases). Leachate from two (2) of the samples was analysed also to determine if there might be any risk of mobile contamination, with testing including TPH where appropriate.

The results of the contamination testing are included in Appendix 3 of this report (Eurofins Chemtest Ltd. Report 25-23864) and have been used in the following contamination risk assessment.

5. Risk Assessment

5.1 Method

Geoinvestigate Ltd. uses a combination of assessment criterion provided by the Environment Agency, DEFRA and by the Chartered Institute of Environmental Health in order to assess the presence of potentially harmful chemicals within soils and water. These include: Environment Agency Environmental Quality Standards (EQSs), Site Specific Assessment Criteria (SSAC) generated using CLEA software version 1.06 site specific risk assessment modelling, DEFRA Category 4 Screening Levels (C4SLs), and Land Quality Management / Chartered Institute of Environmental Health (LQM/CIEH) Safe for Use Levels (S4ULs).

As the site is to be developed as a residential dwelling, it falls within the residential end-use category. As it is possible that persons living on the site may cultivate vegetables / fruit for consumption, consideration to this end is also necessary.

No site-specific assessment criteria (SSAC) have been created for the site as no unusual circumstances (i.e., occupation periods etc.) are considered to be present/likely at the site that would render the generic residential assessment criteria unsuitable.

The results of the contamination testing that has been carried out have been compared to the soil quality values from the above sources. Where results have been found to be above the intervention values, an assessment of the available pathways and receptors has been carried out to determine whether further investigation or remediation may be necessary.

An appraisal of the chemical results and relevant limits is set out in the Contamination Risk Assessment that follows.

5.2 Contamination Risk to Sensitive Receptors

5.2.1 Human Health

Made ground was encountered to a maximum depth of 1.10m, this was underlain by a cohesive natural clay subsoils and siltstone.

No visual and/or olfactory evidence of contamination was found in any of the encountered soils, including no visible evidence of asbestos contamination.

As discussed earlier in the report, levels of determinands have been compared to the soil assessment criteria for residential end-use, as published by DEFRA and LQM/CIEH, with DEFRA C4SLs taking priority where more than one target value exists due to their “more pragmatic whist still strongly precautionary” nature (quote from SP1010 C4SL Policy companion Document).

A mean Soil Organic Matter Content (SOM) of 9.37% was returned from the soil analyses. Therefore, the LQM/CIEH GAC for PAHs and other hydrocarbons were chosen using the highest Soil Organic Matter (SOM) option of 6.0%, which is considered the most representative (and a conservative) value for the samples returned.

A summary of the results is shown in Table 1 below.

Table 2: Summary of Chemical Determinands in Soil

Determinand	Units	Limits of Detection	Total Samples	Returned Concentrations		Threshold Ranges S4UL / C4SL	
				Min	Max	Min	Max
pH	pH Unit	N/a	6	7.4	8.7	-	-
Water Soluble Sulphate as SO4 (2:1)	g/l	<1.25	6	0.017	0.06	-	-
Moisture Content	%	< 0.01	6	5.7	12	-	-
Organic Matter	%	< 0.1	6	1	8.2	-	-
Metals							
Arsenic	mg/kg	<1	6	2.1	15	37	37
Boron (Water Soluble)	mg/kg	< 1	6	<0.2	1	290	290
Cadmium	mg/kg	< 0.2	6	<0.2	1	11	11
Copper	mg/kg	< 4	6	15	69	2400	2400
Chromium III	mg/kg	< 2	6	11	36	910	910
Hexavalent Chromium	mg/kg	< 1.8	6	<1.8	< 1.8	6	6
Free Cyanide	mg/kg	< 1	6	<1	< 1	140	140
Total Cyanide	mg/kg	< 1	6	<1	< 1	140	140
Lead	mg/kg	< 1	6	9.6	250	200	200
Mercury (Aqua regia extractable)	mg/kg	< 0.3	0	0	< 0.3	410	410
Nickel	mg/kg	< 1	6	16	53	120	180
Selenium	mg/kg	< 1	6	0.5	1	250	250
Zinc	mg/kg	< 1	6	53	370	3700	3700
Asbestos Screen	-	-	6	Not Detected		Detection	
Organics							
Total Phenols (Monohydric)	mg/kg	< 1	6	<1	0.12	120	380
Naphthalene	mg/kg	< 0.05	6	<0.05	0.51	2.3	13
Acenaphthylene	mg/kg	< 0.05	6	<0.05	0.27	170	920
Acenaphthene	mg/kg	< 0.05	6	<0.05	0.46	210	1100
Fluorene	mg/kg	< 0.05	6	<0.05	0.47	170	860
Phenanthrene	mg/kg	< 0.05	6	<0.05	6.7	95	440
Anthracene	mg/kg	< 0.05	6	<0.05	1.7	2400	11000
Fluoranthene	mg/kg	< 0.05	6	<0.05	12	280	890
Pyrene	mg/kg	< 0.05	6	<0.05	10	620	2000
Benzo[a]anthracene	mg/kg	< 0.05	6	<0.05	5.2	7.2	13
Chrysene	mg/kg	< 0.05	6	<0.05	5	15	27
Benzo[b]fluoranthene	mg/kg	< 0.05	6	<0.05	6	2.6	3.7
Benzo[k]fluoranthene	mg/kg	< 0.05	6	<0.05	2.2	77	100
Benzo[a]pyrene	mg/kg	< 0.05	6	<0.05	4.8	5	5
Indeno(1,2,3-c,d)Pyrene	mg/kg	< 0.05	6	<0.05	2.9	27	41
Dibenz(a,h)anthracene	mg/kg	< 0.05	6	<0.05	0.59	0.24	0.3
Benzo[g,h,i]perylene	mg/kg	< 0.05	6	<0.05	2.8	320	350
Total Of 16 PAH's	mg/kg	< 0.08	6	<0.05	62	-	-

Table 1 continued on following page

Table 2 (Ctd): Summary of Chemical Determinands in Soil

Determinand	Units	Limits of Detection	Total Samples	Returned Concentrations		Threshold Ranges S4UL / C4SL	
				Min	Max	Min	Max
Ali >C5-C6	mg/kg	< 0.02	6	<0.01	< 0.02	42	160
Ali >C6-C8	mg/kg	< 0.02	6	<0.01	< 0.02	100	530
Ali >C8-C10	mg/kg	< 0.05	6	<0.01	< 0.05	27	150
Ali >C10-C12	mg/kg	< 1	6	<1	< 1	130	760
Ali >C12-C16	mg/kg	< 2	6	7.7	10	1100	4300
Ali >C16-C21	mg/kg	< 8	6	13	16	65000	110000
Ali >C21-C35	mg/kg	< 8	6	12	14	65000	110000
Ali >C35-C44	mg/kg	< 8.4	6	21	26	65000	110000
Ali >C5-44	mg/kg	< 10	6	<10	< 10	-	-
Aro >C5-C7	mg/kg	< 0.01	6	<0.01	< 0.01	70	300
Aro >C7-C8	mg/kg	< 0.01	6	<0.01	< 0.01	130	660
Aro >C8-C10	mg/kg	< 1	6	<0.02	< 1	34	190
Aro >C10-C12	mg/kg	< 1	6	<1	< 1	74	380
Aro >C12-C16	mg/kg	< 2	6	3.7	20	140	660
Aro >C16-C21	mg/kg	< 10	6	16	30	260	930
Aro >C21-C35	mg/kg	< 10	6	8.5	130	1100	1700
Aro >C35-C44	mg/kg	< 8.4	6	2.3	180	1100	1700
Total EPH >C10-C40 MC	mg/kg	< 10	6	20	55	-	-

The analysis has shown elevated concentrations of a number of determinands.

A summary of the exceedances determined during laboratory testing and subsequent assessment are shown in table 2 below.

Table 3: Soil Threshold Exceedances and Locations

Location	Depth (mbgl)	Determinand(s)	Threshold @ 6% (mg/kg)	Observed Concentration (mg/kg)
BH1	0.5	Lead	200	250
TPA	0.2	Benzo[b]fluoranthene	3.7	6.0
		Dibenz(a,h)anthracene	0.3	0.59

**Value in parentheses denotes estimated soil saturation limit above which a possibility of free-phase contamination *might* exist in soil.

Levels of two (2) PAH species have been detected above their corresponding target values in one (1) sample recovered from a depth of 0.20m in TPA. These are benzo(b)fluoranthene and dibenzo(a,h)anthracene.

Elevated levels of lead have been discovered in one of the eight analysed samples. This sample was recovered from depths of 0.50m in BH1.

Generally, petroleum hydrocarbons have been returned at levels below detectable levels and/or the adopted target values.

No asbestos was detected in any of the samples inspected.

Although the samples were collected outside of the recommended holding times due to delays in collection by the laboratory, and therefore are deviating from standard sampling protocol, the analytical

results remain elevated. As such, the findings are considered representative of contamination requiring remediation, and the delayed collection is not considered to alter the overall conclusions or recommended remedial actions.

5.2.2 Controlled Waters

Leachate was analysed from three (3) samples to investigate possible contaminant mobility. These samples were obtained from BH1 (0.50m) and TPB (0.20m).

The leaching test is an aggressive test (de-ionised water) and is not in aqueous equilibrium (steady state) with the solid sample, this may cause overestimation of the aqueous phase concentrations compared to groundwater in contact with the same contaminated soils and therefore may not give results that are an accurate representation of the groundwater risk on site. Further to this, the leaching test was actually developed for inorganic constituents, with the leaching of organics being poorly understood, and again may not be representative of their presence.

Levels for domestic water supply, or the protection of aquatic life levels, as published by the Environment Agency are presented as the assessment criteria, but these are not strictly target values. They are not directly applicable to leachates because these standards would represent the total concentration in the receiving water bodies following mixing and attenuation of the leached contaminants. As such, the standards are included as an example of good water quality for consideration of how leachable contamination might affect such waters.

A Summary of the leachate testing is shown in table 3 below.

Table 4: Chemical Determinands in Leachate

Determinant	Units	LOD	Total Samples	Returned Concentrations		Recommended Thresholds	
				Min	Max	Risks to Groundwater	Risks to Surface Water
Inorganics							
pH at 20C	-	n/a	2	9.30	9.60	5.5 - 10 (UKDWS)	
Arsenic (dissolved)	µg/l	<1	2	0.41	1.20	10	50
Boron (dissolved)	µg/l	<10	2	<10	<10	1000	1000
Cadmium (dissolved)	µg/l	<0.08	2	<0.08	<0.08	5	0.45 - 1.5
Chromium (dissolved)	µg/l	<0.4	2	0.53	4.30	50	3.4
Copper (dissolved)	µg/l	<0.7	2	1.60	3.80	2000	1 - 28
Lead (dissolved)	µg/l	<1	2	2.80	5.40	10	7.2
Mercury (dissolved)	µg/l	<0.5	2	<0.5	<0.5	20	20
Nickel (dissolved)	µg/l	<0.3	2	0.68	3.50	20	20
Selenium (dissolved)	µg/l	<4	2	<4	<4	10	10
Zinc (dissolved)	µg/l	<0.4	2	12.00	24.00	3750	8 - 125
Calcium (dissolved)	µg/l	<0.012	0	0.00	0.00	-	-
Total Phenols	µg/l	<10	2	<10	<10	50	7.7
*Organics (**None returned** above acceptable concentrations)*							
Total Of 16 PAH's	µg/l	<0.01	2	<0.01	<0.01	-	-

A summary of potential risks determined during laboratory testing and subsequent assessment are shown in table 4 below.

Table 4: Water/Leachate Risk Locations

Location	Depth (mbgl)	Determinand(s)	Threshold (µg/l)	Observed Concentration (µg/l)
TPB	0.2	Chromium	3.4	4.3

As can be seen from Table 4 and the detailed results presented in the Eurofins Chemtest Ltd. report 25-23864 (Appendix 3), soils at the site have generally been shown to not be leaching any potential contaminants at levels that would be expected to have any significant impact on local ground and surface water bodies.

When considering attenuation during migration and dilution in receiving water bodies it is highly unlikely that even the total leachable quantity of contaminants would have any measurable effect on receiving water bodies.

The clay present at depth across the site should significantly reduce any sub-surface migration and processes including dilution, attenuation and biodegradation will reduce the concentration of contamination.

5.3 Hazardous Gas / Ground Gas

5.3.1 Gas Regime

Given the depth of made ground at the site and the potential presence of shallow historical coal mine workings, a ground gas monitoring exercise has been undertaken at the site to quantify the risk in this regard. Gas monitoring wells were installed in boreholes BH1, BH6 and BH5.

The results of the six (6) gas monitoring visit at the site are presented in Table 5 below.

Table 5: Summary of Gas Monitoring Data

Job Number	G25193
Client	Horizon Healthcare Homes Ltd
Site	Boothroyd Lane, Dewsbury, WF13 2LF

	CH_4 (%)	CO_2 (%)	O_2 (%)
Mininum	0	0.1	14.1
Maximum	0	1.5	15.4

Borehole	Number of Visits	CH_4 (%)		CO_2 (%)		O_2 (%)		Flow Rate (l/hr)	H_2S (ppm)	CO (ppm)	Atmospheric Pressure (mb)
		Min.	Max.	Min.	Max.	Min.	Max.				
BH1	6	0	0	0.1	1.2	14.2	14.8	<0.1	0	0	1007
BH6	6	0	0	0.3	0.8	14.1	15.4	<0.1	0	0	to
BH5	6	0	0	0.1	1.5	14.1	15.1	<0.1	0	0	1020

The gas monitoring visit carried out to date at atmospheric pressures of 1007mb to 1020mb returned:

- Levels of O_2 between 14.1% and 15.4%.
- CO_2 content ranging from 0.1% to 1.5%.
- CH_4 content consistently below detectable limits.
- H_2S and CO content consistently below detectable limits.
- Gas flow rates below detectable limits (<0.01lt/hr) at all locations on each monitoring occasion.
- All of the wells were dry on each monitoring visit.

The returned gas monitoring results have consistently fallen within the limits for Characteristic Situation 1 (CS1) classifications*. With a maximum GSV of 0.0015l/hr and CO_2/CH_4 levels consistently below trigger levels (5% and 1% respectively), no ground gas protection will be required in the proposed structure(s).

*Modified Wilson and Card Classification, CIRIA C665.

In addition, gas monitoring was carried out during the intrusive coal investigation works, including drilling through the shallow coal seams, during which no hazardous, or elevated ground gas detections were recorded. Whilst the atmospheric conditions encountered are not considered to represent absolute worst-case pressure conditions, the absence of gas exceedances during both routine monitoring and coal drilling activities indicates a low likelihood of significant ground gas generation or migration associated with the shallow coal workings beneath the site.

Full ground gas monitoring results can be found in Appendix 4.

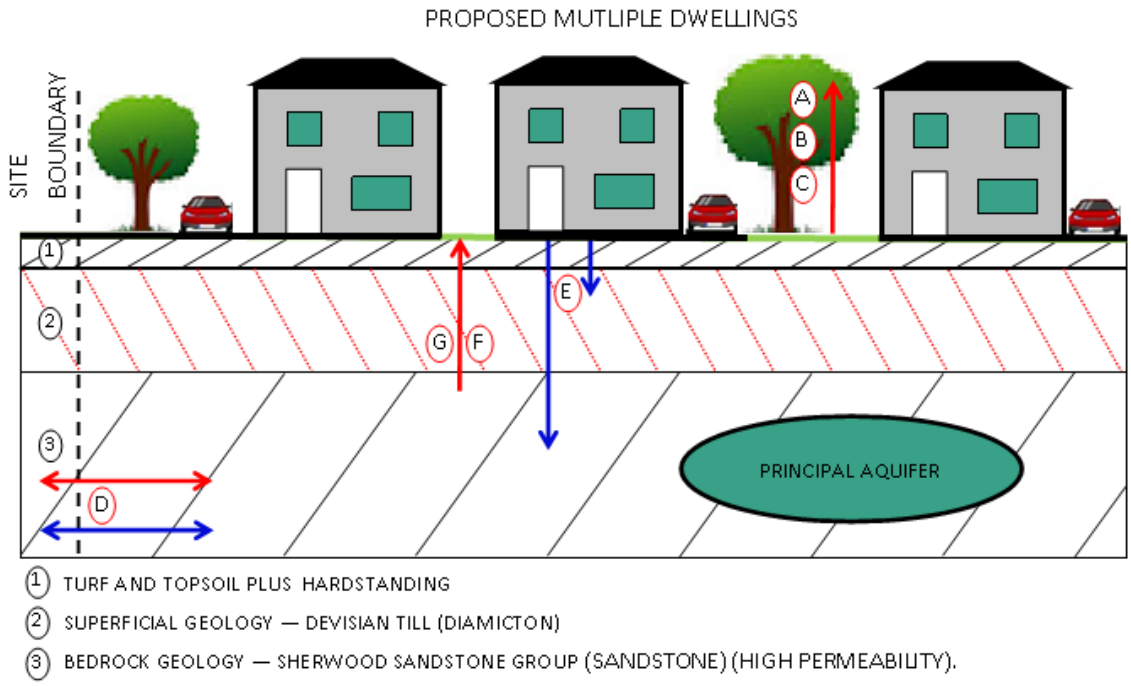
5.3.2 Radon Gas

As confirmed by the phase 1 desk study report for the site, the site lies within a radon affected area where between 3%-5% of the properties are above the radon action level. Therefore, basic radon protection is likely to be required for the proposed development.

6. Conceptual Ground Hazard Model (CGHM)

The conceptual ground hazard model (CGHM) presented on the following page shows the potential hazards and pollutant linkages which have been considered at the site and those which may still be complete, or would be complete, if the site were to be developed as a residential unit in its current condition.

Figure 1: CGHM – Conceptual cross section of site including a Source, Pathway and Receptor Model



1. TURF AND TOPSOIL PLUS HARDSTANDING
2. SUPERFICIAL GEOLOGY — DEVISIAN TILL (DIAMICTON)
3. BEDROCK GEOLOGY — SHERWOOD SANDSTONE GROUP (SANDSTONE) (HIGH PERMEABILITY).

IDENTIFIED HAZARDS Including Potential CONTAMINATION SOURCES

-Limited made ground present on site.

-No sources of ground gas present withing the surrounding area.

IDENTIFIED RECEPTORS and ASSOCIATED PATHWAY

A— End Users through Direct Contact / Inhalation / Ingestion. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

B— Plants and Trees through uptake, possible given the intended end use of the site.

C— End Users through cultivation and consumption of vegetables / fruit. Possible given the intended end use of the site.

D— Neighbouring Sites through lateral migration (in soil and water, including surface water run off).

E— Ground water through leaching of sub-soil.

F— Buildings and services through direct contact. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

Linkages A—F are considered broken due to low contamination results

G— End users and buildings through ground gas migration. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

No possible gas source are present and limited/shallow made ground was encountered.

7. Conclusions

7.1 Soil & Water Contamination

Soil analysis results have confirmed that remedial works will be required at the site before it can be deemed fit for purpose in a residential context.

No contamination risk to ground/surface waters has been identified.

The most cost-effective and appropriate method of remediation is likely to comprise the installation of a capping layer (often referred to as a cover system). This comprises the excavation and removal of soils to (normally) 600mm below the proposed finished ground levels, followed by replacement with at least a 600mm thickness (or other agreed thickness) of proven uncontaminated new soils. Made ground extends to variable depths across the site, up to 1.50m below the current ground levels and has been confirmed to pose no risk to local ground and surface waters through leaching. As such, the confining of these soils below a new capping layer will minimise the quantity of waste to be excavated and transported to landfill, while posing no residual risk to the proposed development or water environment.

The local planning authority (LPA) will most likely require a "remediation and validation strategy" document for approval prior to commencement of the remedial works, and a "validation report" on completion of the works confirming their success.

Though unlikely, if the development plan were to change significantly, or obvious evidence were uncovered during groundworks of potential contamination that has hitherto not been encountered, then both Geoinvestigate Ltd. and the local planning authority should be notified and, if appropriate, redevelopment works halted/postponed while further assessment and/or remediation work is undertaken.

7.2 Hazardous Gas / Ground Gas

Ground gas monitoring has now been completed at the site, with all six scheduled visits undertaken. Results consistently show no significantly elevated concentrations of hazardous gases and negligible gas flow rates (below detectable limits), including during periods of low and falling atmospheric pressure.

Based on the complete dataset, the site falls within Characteristic Situation 1 (CS1) of the Modified Wilson and Card classification, or "Green" under the NHBC Traffic Light System for low-rise housing with a ventilated underfloor void (minimum 150 mm) (CIRIA C665). Accordingly, no gas protection measures are required for the proposed development.

Basic Radon Protection measures will, however, be required for the new development.

7.3 Historical Coal Mining

As per section 3.2, based on Geoinvestigate's conclusions that the Flockton Thin seam has probably been mined beneath the site and the yet generally favourable results of the drilling investigation indicating that mining cavities are absent within very shallow depth beneath the new building, it is Geoinvestigate's opinion that a reinforced foundation strip and floor solution would provide appropriate mitigation against

the low risk of the occurrence of any future significant mining related surface ground movement. This is in preference to a drilling and grouting exercise which in Geoinvestigate's opinion is likely to achieve little grout penetration.

7.4 Foundation Design

The sampling boreholes at the site generally found thin made ground or, occasionally stiff natural clay superficial strata underlain by weak weathered siltstone rock. The rock commenced below <1m in BH3 and BH5, 1.10m in BH1, BH2 and BH4 and deeper at 1.30m in BH6. BH7 and BH8.

Given the findings of the rotary borehole investigation, it is considered that a reinforced foundation strip and floor solution would provide appropriate mitigation against the low risk of the occurrence of any future significant mining related surface ground movement.

The reinforced strip foundations (seated on competent siltstone rock) may be designed to a net allowable bearing pressure of 100kN/m^2 however all foundations should be reinforced and placed onto the natural highly weathered siltstone.

Following removal of the initial made ground or natural clay deposits, the rock would provide a suitable base to commence construction of a lightly loaded ground bearing floor slab.

Groundwater was not encountered within any excavations during the investigation. Therefore, groundwater ingress should not be an issue during construction. However, all foundation excavations should be monitored for groundwater ingress during formation and sumps/pumps be utilised where necessary.

7.5 Road Design

DCP testing has indicated that the lowest CBR value for surface might be 5%.

As such, based on a CBR of 5%, NHBC guidance for "Shared parking and associated access areas having frequent use by commercial vehicles" recommends a sub-base of 250mm compacted stone below the normal road construction (normal asphalt and base layers), or 150mm underlain by a geo textile mesh.

However, it should be noted that wet or winter weather and site trafficking may detrimentally affect the CBR rating of the soil once works are commenced, and CBR values may vary seasonally and with moisture content. It may be necessary to carry out further testing during formation works to confirm requirements in this regard.

7.6 Concrete Design

The results of chemical analyses of the fill returned Water Soluble Sulphate levels of between 17mgl^{-1} and 60mgl^{-1} and pH levels of between 7.4 and 8.7. Additionally, the site is inferred to classify as brownfield soils with no mobile water.

On this basis concrete in contact with the ground may be designed to ACEC Class DS-1 AC-1s of "BRE Special Digest 1 – Concrete in aggressive ground".

END OF REPORT

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Atlantic Street
Altrincham
WA14 5NQ
Tel.
enquiries@geoinvestigate.co.uk

APPENDIX 1

Site Plans

and

Exploratory Hole Logs

CLIENT: Homewood Design	TITLE: Site Plan				Legend: Window Samples; Hand Dug Trial Pit; Rotary Borehole; CBR Location
PROJECT: Land at Boothroyd Lane, Dewsbury, WF13 2LF	Notes:				
PROJECT NUMBER: G25193	SCALE: NTS	DRAWN: LR DATE: 11/02/25	CHECK: LR DATE: 11/02/25	REV: 0 DATE: 11/02/25	

Geoinvestigate Ltd
Geoinvetigate House
Terry Dicken Indsutrial Estate
Ellerback Way
Stokesley
TS9 7AE
Tel: 07795 845

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 1

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
	TURF / MADE GROUND Loose to medium dense in places brown slightly clayey sandy gravel. Gravel is fine to coarse of sandstone, brick, concrete and occasional coal.	1100			O	Cv kN/m^2			0.25
					O				0.50
									0.75
1.10					O S		1.00-1.45 2/5/14/18/20/22 N=64		1.00
1.30	Weak light orange SILTSTONE.	200			O				1.30
	Borehole terminated at 1.30m due to refusal.								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 1.30 mbgl
Borehole remained dry on completion
Gas well installed to 1.30m with gas bung and cover

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 1
Scale 1:1

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 2

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
						Cv kN/m^2			
0.15	TURF / TOPSOIL Loose brown gravelly sand. Gravel is fine to coarse of sandstone.	150			O				0.25
	Stiff light brown slightly silty sandy CLAY. Possible highly weathered siltstone rock.				O	110			0.50
		950							0.75
1.10					O S	122	1.00-1.45 3/4/4/4/5/5 N=18		1.00
	Weak brown SILTSTONE.								1.25
					O				1.50
		1100							1.75
2.20					O S		2.00-2.30 10/15/25/32 N=57/150mm		2.00
					O				2.20
	Borehole terminated at 2.20m due to refusal								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 2.20 mbgl
Borehole remained dry on completion

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 2
Scale 1:1

GEO INVESTIGATE
Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 3
Sheet No 1 of 1
Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
0.40	TURF / TOPSOIL Firm brown sandy gravelly clay. Gravel is fine to coarse of sandstone and occasional brick.	400			O	Cv kN/m²			0.25
	Weak light brown SILTSTONE.				O				0.50
									0.75
					O S		1.00-1.45 3/3/4/3/4/6 N=17		1.00
									1.25
		2000			O				1.50
									1.75
					O S		2.00-2.45 0/9/10/12/17/2 N=67		2.00
									2.25
2.40					O				2.40
	Borehole terminated at 2.40m due to refusal								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 2.40 mbgl
Borehole remained dry on completion

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 3
Scale 1:1

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 4

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
0.10	TURF / TOPSOIL Loose brown sandy gravel. Gravel is fine to coarse of brick.	100			O	Cv kN/m²			0.25
	MADE GROUND Firm brown sandy gravelly clay. Gravel is fine to coarse of sandstone, brick and occasional coal. Possible reworked natural.	1000			O	64			0.50
									0.75
1.10					O S	78	1.00-1.45 3/4/5/4/4/4 N=17		1.00
	Weak light brown SILTSTONE.	1500			O				1.25
									1.50
									1.75
					O S		2.00-2.45 7/6/6/7/7/9 N=29		2.00
									2.25
2.60					O		2.60-2.75 31/40		2.50
					O S		N=71/150mm		2.60
	Borehole terminated at 2.60m due to refusal								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 2.60 mbgl
Borehole remained dry on completion

Key:

- Slotted Pipe
- Plain Pipe
- Bentonite
- Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 4

Scale 1:1

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 5

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)		Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
0.05	TARMAC / MADE GROUND Compact grey dolomite	50				Cv kN/m^2			
	Stiff brown sandy gravelly CLAY. Gravel is fine to coarse of sandstone.	750			O O	130			0.25 0.50
0.80									0.75
	Weak light brown SILTSTONE.	1000			O S O		1.00-1.45 3/3/5/5/5/6 N=21		1.00 1.25 1.50
1.80					O S		1.80-1.95 33/35 N=70/150mm		1.80
	Borehole terminated at 1.80m due to refusal								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 1.80 mbgl
Borehole remained dry on completion
Gas well installed to 1.80m with gas bung and cover

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 5
Scale 1:1

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 6

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
0.10	Weak CONCRETE.	100				Cv kN/m^2			
	Stiff brown sandy gravelly CLAY. Gravel is fine to coarse of sandstone.				O				0.25
					O	110			0.50
		1050							0.75
1.15					O	126			1.00
	Weak light brown SILTSTONE.								1.25
		250					1.10-1.70 12/22/30/37		
1.40					O S		N=67/150mm		1.40
	Borehole terminated at 1.40m due to refusal								

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 1.40 mbgl
Borehole remained dry on completion
Gas well installed to 1.40m with gas bung and cover

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 6
Scale 1:1

GEO INVESTIGATE
Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 7
Sheet No 1 of 1
Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
0.10	TARMAC.	100				Cv kN/m^2			
	Firm brown mottled orange in places slightly sandy CLAY with occasional fine to coarse gravel of sandstone.				O				0.25
					O	60			0.50
		1200							0.75
					O	74			1.00
1.30									1.25
	Weak light brown SILTSTONE.				O	60			1.50
									1.75
		1400			O S		2.00-2.45 4/3/3/3/4/5 N=15		2.00
									2.25
					O				2.50
2.70					O S		2.70-3.15 10/14/17/22/25/36		2.70
	Borehole terminated at 2.70m due to refusal						N=100		

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 2.70 mbgl
Borehole remained dry on completion

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

BH 7
Scale 1:1

GEO INVESTIGATE

Borehole Log

Client Ref:
Our Ref: G25193
Date: 17/06/2025
Location: Boothroyd Lane, Dewsbury WF13 2LF
Comments:

BH 8

Sheet No 1 of 1

Drilled by: CD/TL
Logged by: AM

Depth (m)	Description of Strata	Thick -ness	Legend	Gas Well	Sample	Test Type Result	SPT N Value (Depth)	Depth to Water	Depth (m)
	TURF / TOPSOIL Loose light brown sandy gravel. Gravel is fine to coarse of sandstone and occasional brick.	550			O	Cv kN/m^2			0.25
0.55					O				0.50
	MADE GROUND Loose grey andy gravel and cobbles. Gravel and cobbles are fine to coarse of concrete, sandstone, plastic and occasional brick.	250							0.75
1.10	Stiff brown sandy gravelly CLAY. Gravel is fine to coarse of sandstone.	300			O	130			1.00
	Weak light brown SILTSTONE.	500							1.25
1.60					O O S		1.60-1.75 33/41		1.50
	Borehole terminated at 1.60m due to refusal						N=74/150mm		

Remarks:
Casing to 1.00m
Dynamic windowless sampling by Terrier Rig to 1.60 mbgl
Borehole remained dry on completion

Key:

	Slotted Pipe	**O**	Disturbed sample
	Plain Pipe	**Cv**	Shear vane
	Bentonite	**W**	Water sample
	Gravel Filter	**S**	Standard Penetration Test
		C	Cone Penetration Test

BH 8

Scale 1:1

Mining Remediation Authority

Permit to Enter or Disturb Mining Remediation Authority Interests

Permit 30113

Name and Address of Permit Holder:

Horizon Healthcare Homes Ltd
3 Park Square
Leeds
LS1 2NE

Site Location:

Land at Boothroyd Lane
Dewsbury
WF13 2LF

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation by three boreholes to 30m to determine presence of shallow mine workings

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of **12 months** from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e.) into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH_4, CO_2, O_2, H_2S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: _____ Granted Date: _____

For and on behalf of the Mining Remediation Authority

Nominated Representative: Helen Day, Permitting Manager;
Mining Remediation Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

Mining Remediation Authority

Granted Permit Boundary

Permit Ref: 30113

Permit Boundary:

The Mining Remediation Authority is the trading name of the Coal Authority ('TCA') established pursuant to Section 1 of the Coal Industry Act 1994, of 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG. The Coal Authority remains the legal name of the Authority

Mining Remediation Authority

Permit to Enter or Disturb Mining Remediation Authority Interests

Permit 30291

Name and Address of Permit Holder:

Horizon Healthcare Homes Ltd
3 Park Square
Leeds
LS1 2NE

Site Location:

Land at
Boothroyd Lane
Dewsbury
WF13 2LF

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation by an additional 12 boreholes to 20m to determine presence of shallow mine workings

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of **12 months** from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e.) into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH_4, CO_2, O_2, H_2S at borehole/rig and monitoring points*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: _____ Granted Date: _____

For and on behalf of the Mining Remediation Authority

Nominated Representative: Helen Day, Permitting Manager
Mining Remediation Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

Mining Remediation Authority

Granted Permit Boundary

Permit Ref: 30291

Permit Boundary:

The Mining Remediation Authority is the trading name of the Coal Authority ('TCA') established pursuant to Section 1 of the Coal Industry Act 1994, of 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG. The Coal Authority remains the legal name of the Authority

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 1

Sheet No 1 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.20	TURF onto brown DRIFT.	1,200			
4.40	Light brown SILTSTONE.	3,200			2.50
8.20	Grey MUDSTONE.	3,800		Flush lost 8.10m	5.00 7.50
8.30	Very weak SANDSTONE. Possible BROKEN GROUND.	100			
10.10	SANDSTONE. Flush returned grey at 9.50m.	1,800		Flush returned 9.50m	10.00
16.60	Grey MUDSTONE.	6,500			12.50 15.00
16.80	Weak black SHALEY COAL.	200			
20.70	Grey MUDSTONE.	3,900			17.50 20.00
27.10	Light grey SANDSTONE.	6,400			22.50 25.00

Remarks:

Casing to 2.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost between 8.10m and 9.50m. No voids encountered.

RH 1

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 1

Sheet No 2 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
27.10	Light grey SANDSTONE.	6,400			
30.00	Grey MUDSTONE.	2,900			27.50
	Rotary hole terminated at 30.00m.				30.00

Remarks:

Casing to 2.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost between 8.10m and 9.50m. No voids encountered.

RH 1

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 2

Sheet No 1 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.10	TARMAC onto brown DRIFT.	1,100			
4.40	Light brown SILTSTONE.	3,300			2.50
10.50	Grey MUDSTONE.	6,100		Flush lost at 10.50m	5.00 7.50 10.00
17.40	Very weak BROKEN GROUND.	6,900			12.50 15.00
21.70	MUDSTONE.	4,300			17.50 20.00
26.40	Very weak BROKEN GROUND.	4,700			22.50 25.00

Remarks:

Casing to 2.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 10.50m. No voids encountered.

RH 2

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 2

Sheet No 2 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
26.40	Very weak BROKEN GROUND.	4,700			
	MUDSTONE.	3,600			27.50
30.00					30.00
	Rotary hole terminated at 30.00m.				

Remarks:

Casing to 2.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 10.50m. No voids encountered.

RH 2

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 3

Sheet No 1 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.20	TARMAC onto brown DRIFT.	1,200			
4.50	Light brown SILTSTONE.	3,300			2.50
9.10	Grey MUDSTONE.	4,600			5.00 7.50
15.10	Light grey SANDSTONE.	6,000			10.00 12.50 15.00
16.80	Grey MUDSTONE.	1,700			
17.10	Weak black SHALEY COAL.	300			
20.40	Grey MUDSTONE.	3,300			17.50 20.00
26.40	Light grey SANDSTONE.	6,000			22.50 25.00

Remarks:

Casing to 3.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 3

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 30/06/2025
Location: Land At Boothroyd Lane, Dewsbury, WF13 2LF
Comments:

RH 3

Sheet No 1 of 2

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
26.40	Light grey SANDSTONE.	6,000			
	Grey MUDSTONE.	3,600			27.50
30.00					30.00
	Rotary hole terminated at 30.00m.				

Remarks:

Casing to 3.00m
Microdrill rotary open hole borehole to 30.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 3

Drilled by: A.M
Logged by: A.M

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 4

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.30	TARMAC / brown DRIFT.	1,300			
4.40	Light brown SILTSTONE.	3,100			2.50
8.90	Grey MUDSTONE.	4,500			5.00 7.50
11.10	Light grey SANDSTONE.	2,200			10.00
11.40	Dark grey and black shaley COAL	300			
14.30	Grey MUDSTONE	2,900			12.50
14.70	Dark grey and black shaley COAL	400			
15.00	Grey MUDSTONE	300		Full flush	15.00
	Rotary hole terminated at 15.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 4

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 5

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.10	TARMAC / brown DRIFT.	1,100			
3.90	Light brown SILTSTONE.	2,800			2.50
10.50	Grey MUDSTONE.	6,600			5.00 7.50 10.00
14.70	Dark grey and black shaley COAL	4,200			12.50
15.00	Light grey SANDSTONE	300		Full flush	15.00
	Rotary hole terminated at 15.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 5

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 6

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.30	TARMAC / brown DRIFT.	1,300			
4.30	Light brown SILTSTONE.	3,000			2.50
9.40	Grey MUDSTONE.	5,100			5.00 7.50
10.00	Light grey SANDSTONE.	600		Full flush	10.00
	Rotary hole terminated at 10.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 10.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 6

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 7

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.20	TARMAC / brown DRIFT.	1,200			
4.20	Light brown SILTSTONE.	3,000			2.50
8.80	Grey MUDSTONE.	4,600			5.00 7.50
10.00	Light grey SANDSTONE.	1,200		Full flush	10.00
	Rotary hole terminated at 10.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 10.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 7

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 8

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.10	TARMAC / brown DRIFT.	1,100			
4.10	Light brown SILTSTONE.	3,000			2.50
8.50	Grey MUDSTONE.	4,400			5.00 7.50
10.70	Light grey SANDSTONE.	2,200			10.00
11.20	Dark grey and black shaley COAL	500			
15.00	Light grey SANDSTONE.	3,800		Full flush	12.50 15.00
	Rotary hole terminated at 15.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 8

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 9

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.80	TARMAC / brown DRIFT.	1,800			2.50
7.90	Light brown SILTSTONE.	6,100			5.00
15.20	Light grey SANDSTONE. > Becoming very weak with intermittent flush from 11.50m.	7,300		Intermittent from 11.50m Flush lost at 14.20m	7.50 10.00 12.50 15.00
15.50	Very weak SHALEY COAL.	300			
20.00	MUDSTONE.	4,500			17.50 20.00
	Rotary hole terminated at 20.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 20.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 9

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 10

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.40	TURF / brown DRIFT.	1,400			
8.60	Light brown SILTSTONE.	7,200			2.50 5.00 7.50
15.40	Light grey SANDSTONE.	6,800			10.00 12.50 15.00
15.60	Dark grey and black SHALEY COAL. Weak.	200			
16.70	Light grey SANDSTONE.	1,100			
17.50	Dark grey and black SHALEY COAL. Weak.	800			17.50
20.00	Grey MUDSTONE.	2,500		Full flush	20.00
	Rotary hole terminated at 20.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 20.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 10

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 11

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.10	TURF / brown DRIFT.	1,100			
	Light brown SILTSTONE.	6,000			2.50 5.00
7.10					
	Light grey SANDSTONE.	7,900			7.50 10.00 12.50
15.00				Full flush	15.00
	Rotary hole terminated at 15.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 11

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 12

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.30	TURF / brown DRIFT.	1,300			
7.40	Light brown SILTSTONE.	6,100			2.50 5.00 7.50
15.00	Light grey SANDSTONE.	7,600		Full flush	10.00 12.50 15.00
	Rotary hole terminated at 10.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 12

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 13

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.70	TARMAC / brown DRIFT.	1,700			
8.50	Light brown SILTSTONE.	6,800			2.50 5.00 7.50
17.10	Light grey SANDSTONE. > Becoming very weak from 10.60m to 14.50m.	8,600			10.00 12.50 15.00
17.60	Dark grey and black SHALEY COAL. Weak.	500			17.50
20.00	Grey MUDSTONE.	2,400		Full flush	20.00
	Rotary hole terminated at 20.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 20.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 13

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 03/10/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 14

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.20	TARMAC / brown DRIFT.	1,200			
6.60	Light brown SILTSTONE.	5,400			2.50 5.00
15.00	Light grey SANDSTONE.	8,400		Full flush	7.50 10.00 12.50 15.00
	Rotary hole terminated at 10.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 15.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 14

Drilled by: AM
Logged by: AM

GEO INVESTIGATE

Rotary Borehole Log

Client Ref:
Our Ref: G25193
Date: 08/09/2025
Location: Land at Boothroyd Lane, Dewsbury WF13 2LF
Comments:

RH 15

Sheet No 1 of 1

Depth (m)	Description of Strata	Thick -ness	Legend	Flush	Depth (m)
1.30	TURF / brown DRIFT.	1,300			
	Light brown SILTSTONE.	5,600			2.50
6.90					5.00
	Light grey SANDSTONE.	3,100			7.50
10.00				Full flush	10.00
	Rotary hole terminated at 10.00m				

Remarks:

Casing to 1.50m
Microdrill rotary open hole borehole to 10.00 m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush maintained. No voids encountered.

RH 15

Drilled by: AM
Logged by: AM


ISUZU

APPENDIX 2

Geotechnical Testing

Geotechnical Testing Results

Our Ref: G25193
Your Ref:
Location: Boothroyd Lane, Dewsbury WF13 2LF

TP / BH No.	Sample Depth (m)	Insitu Moisture Content (%)	% Passing BS 425 Micron Sieve	Corrected Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Classification BS5930 [1999]
1	0.20	9.2						
	0.50	16.3						
	1.00	18.9						
	1.30	12.2						
2	0.20	24.9						
	0.50	17.0						
	1.00	17.6	71.6	24.6	23.3	38.2	14.9	CI
	1.50	15.8						
	2.00	11.6						
	2.20	11.9						
3	0.20	16.7						
	0.50	13.4						
	1.00	14.8	85.5	17.4	20.5	38.0	17.5	CI
	1.50	13.4						
	2.00	11.8						
	2.40	10.9						

GEO INVESTIGATE

Geotechnical Testing Results

Our Ref: G25193
Your Ref:
Location: Boothroyd Lane, Dewsbury WF13 2LF

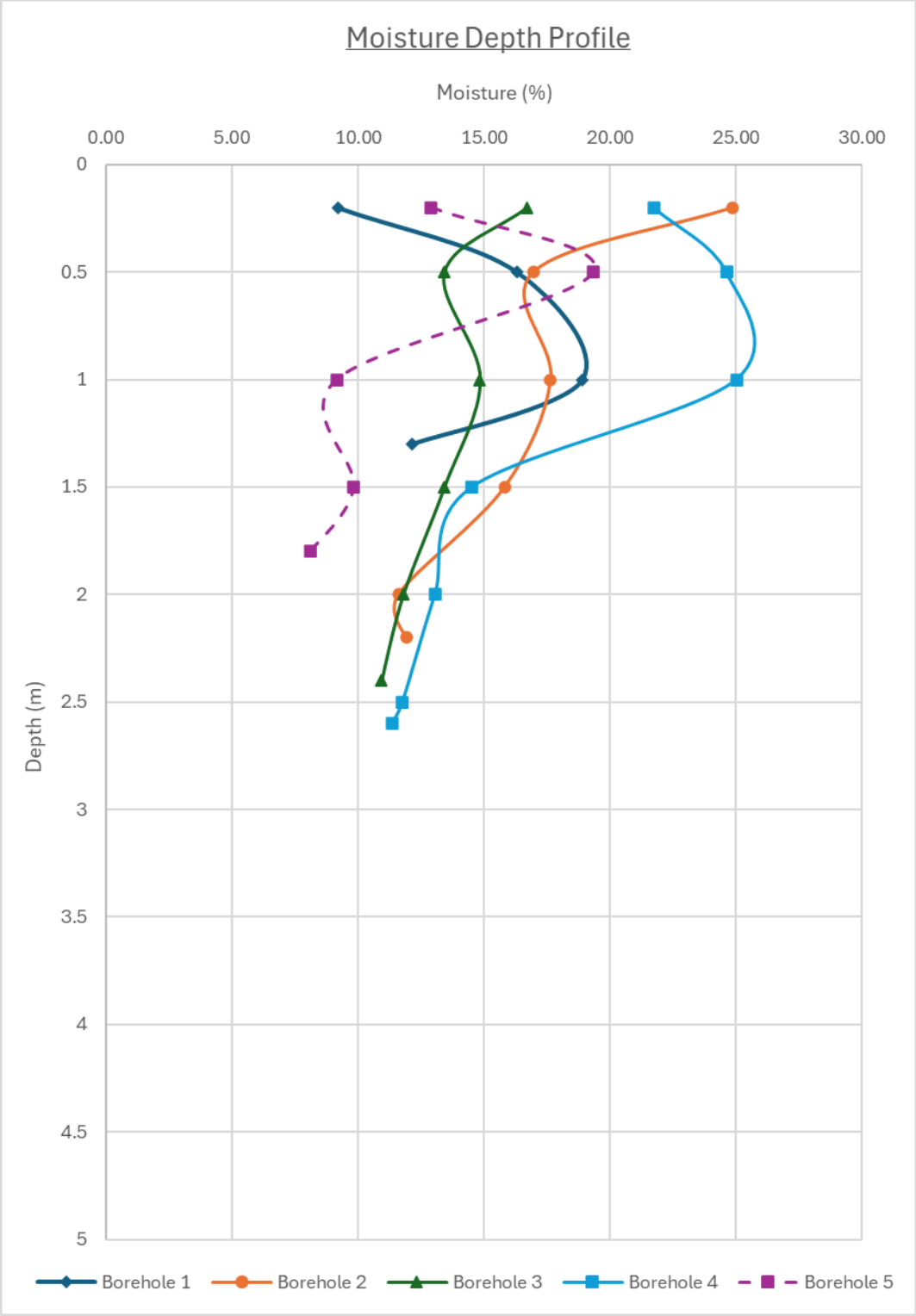
TP / BH No.	Sample Depth (m)	Insitu Moisture Content (%)	% Passing BS 425 Micron Sieve	Corrected Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Classification BS5930 [1999]
4	0.20	21.7						
	0.50	24.6						
	1.00	25.0						
	1.50	14.5	75.3	19.3	19.7	39.0	19.3	Cl
	2.00	13.1						
	2.50	11.8						
	2.60	11.4						
5	0.20	12.9						
	0.50	19.3						
	1.00	9.2						
	1.50	9.8						
	1.80	8.1						
6	0.20	19.8						
	0.50	17.5						
	1.00	14.8	72.9	20.2	23.5	38.9	15.4	Cl
	1.40	11.6						

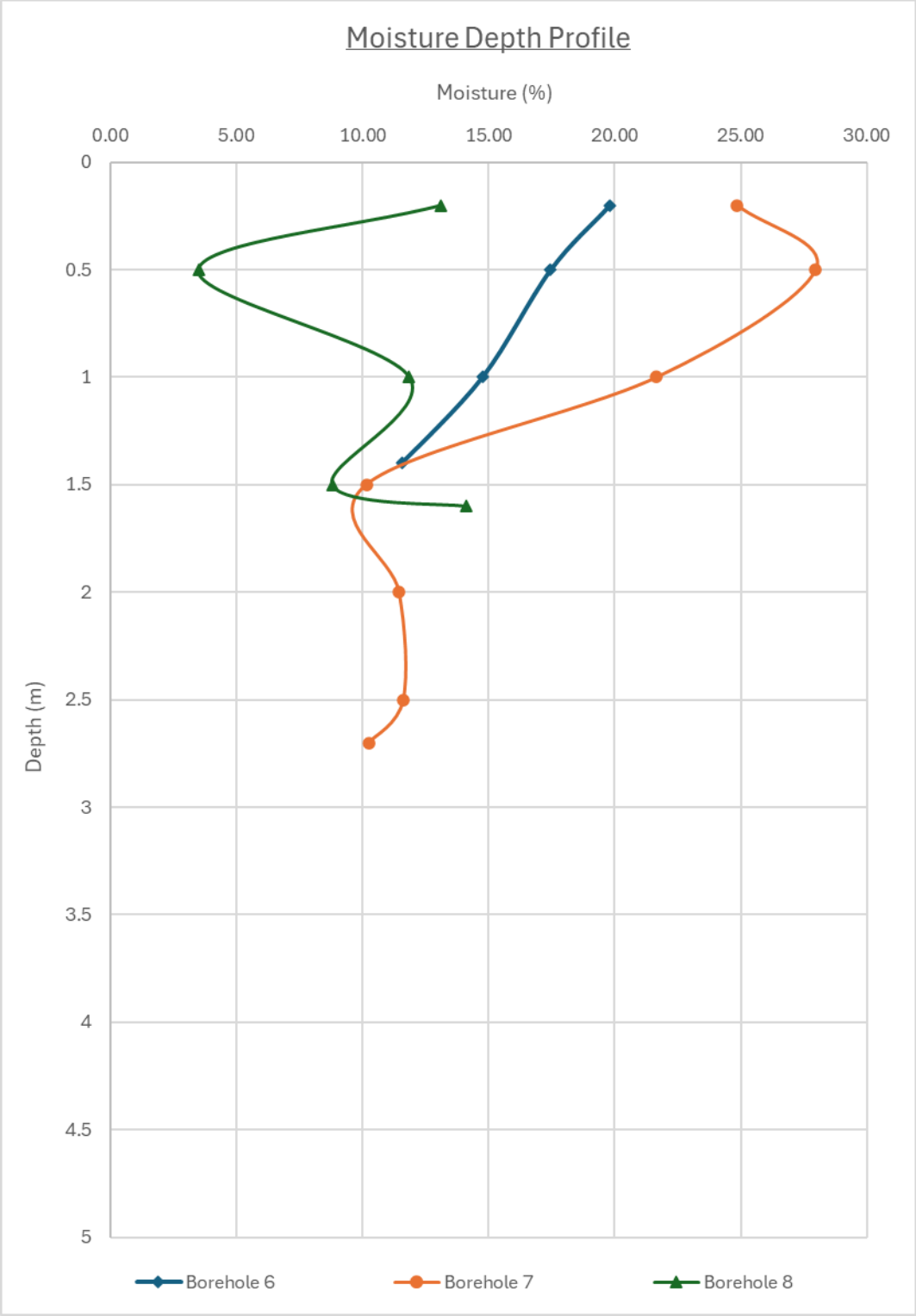
GEO INVESTIGATE

Geotechnical Testing Results

Our Ref: G25193
Your Ref:
Location: Boothroyd Lane, Dewsbury WF13 2LF

TP / BH No.	Sample Depth (m)	Insitu Moisture Content (%)	% Passing BS 425 Micron Sieve	Corrected Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Classification BS5930 [1999]
7	0.20	24.8						
	0.50	28.0						
	1.00	21.7	71.7	30.2	23.4	41.0	17.6	CI
	1.50	10.1						
	2.00	11.5						
	2.50	11.6						
	2.70	10.2						
8	0.20	13.1						
	0.50	3.5						
	1.00	11.8	82.1	14.4	23.0	39.2	16.2	CI
	1.50	8.8						
	1.60	14.1						


Moisture Depth Profile
Moisture (%)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Depth (m)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Borehole 1
Borehole 2
Borehole 3
Borehole 4
Borehole 5

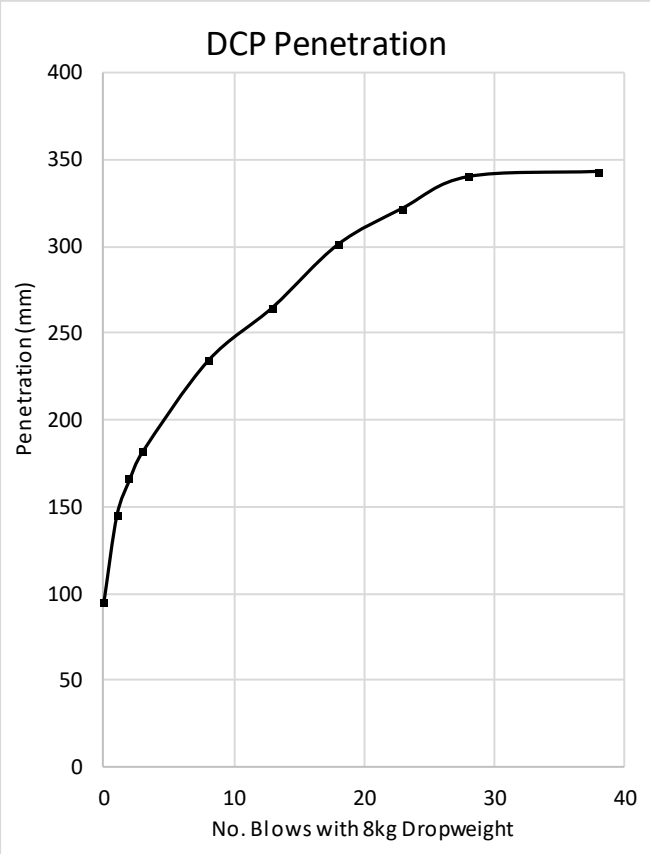

Moisture Depth Profile
Moisture (%)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Depth (m)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Borehole 6
Borehole 7
Borehole 8

DCP Test Result

Site	Boothroyd Lane, Dewsbury WF13 2LF
Job no.	G25193
Test no.	1
Date	17/06/2025

Start Point: 95 mm Below Ground Level

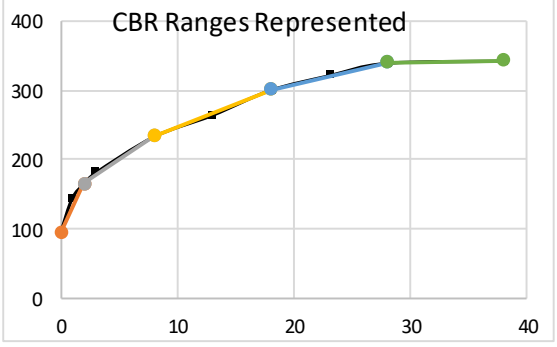
Raw DCP Data		
No. blows (8kg Weight)	Cumulative Blows	Penetration (mm)
0	0	95
1	1	145
1	2	166
1	3	182
5	8	234
5	13	265
5	18	301
5	23	322
5	28	340
10	38	343



Range (blows)	Start (blows)	End (blows)
0-2	0	2
2-8	2	8
8-18	8	18
18-28	18	28
28-38	28	38

Start (depth)	End (depth)	mm per blow	Log_{10}(CBR)
95	166	35.5	0.84141
166	234	11.3	1.36554
234	301	6.7	1.60684
301	340	3.9	1.85524
340	343	0.3	3.03268

Depth (mm)	CBR Value (%)
95-166	**6.9**
166-234	**23.2**
234-301	**40.4**
301-340	**71.7**
340-343	**1078.2**

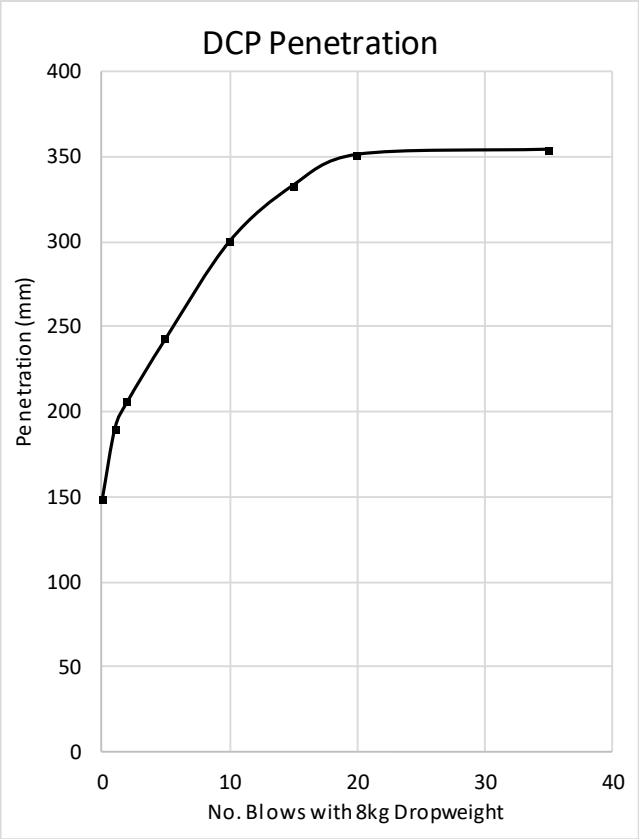


DCP Test Result

Site	Boothroyd Lane, Dewsbury WF13 2LF
Job no.	G25193
Test no.	2
Date	17/06/2025

Start Point: 148 mm Below Ground Level

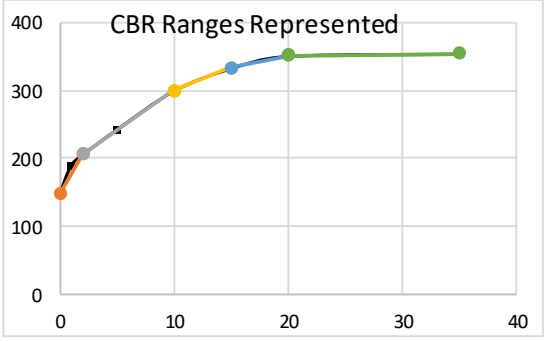
Raw DCP Data		
No. blows (8kg Weight)	Cumulative Blows	Penetration (mm)
0	0	148
1	1	190
1	2	206
3	5	243
5	10	300
5	15	333
5	20	351
15	35	354



Range (blows)	Start (blows)	End (blows)
0-2	0	2
2-10	2	10
10-15	10	15
15-20	15	20
20-35	20	35

Start (depth)	End (depth)	mm per blow	Log_{10}(CBR)
148	206	29.0	0.93425
206	300	11.8	1.34897
300	333	6.6	1.61374
333	351	3.6	1.89199
351	354	0.2	3.21881

Depth (mm)	CBR Value (%)
148-206	8.6
206-300	22.3
300-333	41.1
333-351	78.0
351-354	1655.1

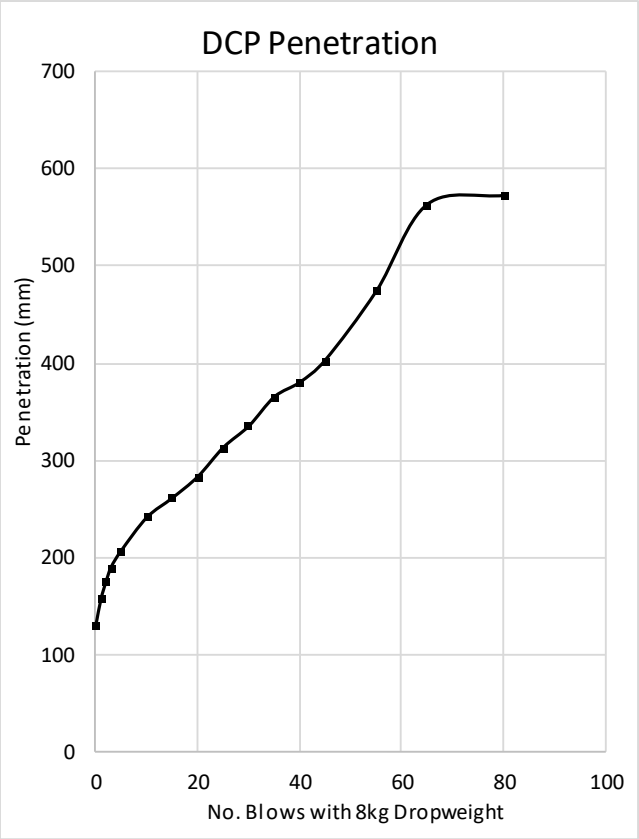


DCP Test Result

Site	Boothroyd Lane, Dewsbury WF13 2LF
Job no.	G25193
Test no.	3
Date	17/06/2025

Start Point: 60 mm Below Ground Level

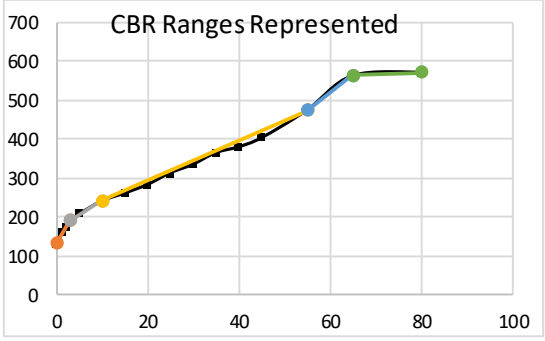
Raw DCP Data		
No. blows (8kg Weight)	Cumulative Blows	Penetration (mm)
0	0	130
1	1	157
1	2	175
1	3	190
2	5	207
5	10	241
5	15	261
5	20	283
5	25	313
5	30	335
5	35	365
5	40	380
5	45	403
10	55	474
10	65	563
15	80	572



Range (blows)	Start (blows)	End (blows)
0-3	0	3
3-10	3	10
10-55	10	55
55-65	55	65
65-80	65	80

Start (depth)	End (depth)	mm per blow	Log_{10}(CBR)
130	190	20.0	1.10481
190	241	7.3	1.56837
241	474	5.2	1.72515
474	563	8.9	1.47649
563	572	0.6	2.71449

Depth (mm)	CBR Value (%)
130-190	**12.7**
190-241	**37.0**
241-474	**53.1**
474-563	**30.0**
563-572	**518.2**



APPENDIX 3

Chemtech Analytical Test Report

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

Final Report

Report No.:	25-23864-1
Initial Date of Issue:	07-Aug-2025
Re-Issue Details:	
Client	*Geo Investigate Ltd*
Client Address:	*Units 4 & 5 Terry Dicken Industrial Ellerbeck Way Stokesley North Yorkshire TS9 7AE*
Contact(s):	*laura.robbins@geoinvestigate.co.uk; enquiries@geoinvestigate.co.uk*
Project	*Land at Boothroyd Lane, Dewsbury, WF13 2LF*

Quotation No.:	*Q25-37991*	**Date Received:**	18-Jul-2025
Order No.:	G25193	**Date Instructed:**	18-Jul-2025
No. of Samples:	*6*		
Turnaround (Wkdays):	5	**Results Due:**	24-Jul-2025
Date Approved:	07-Aug-2025		
Approved By:			

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: Land at Boothroyd Lane, Dewsbury, WF13 2LF

Client: Geo Investigate Ltd				**Chemtest Job No.:**		25-23864	25-23864
Quotation No.: Q25-37991				**Chemtest Sample ID.:**		2003558	2003562
Order No.: G25193				*Client Sample Ref.:*		*BH1*	*TPB*
				Client Sample ID.:		*BH1*	*TPB*
				Sample Type:		*SOIL*	*SOIL*
				Top Depth (m):		*0.5*	*0.2*
				Date Sampled:		*30-Jun-2025*	*30-Jun-2025*
				Time Sampled:		*12:00*	*12:00*
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH at 20C	U	1010	10:1		4.0	9.3	9.6
Sulphur	N	1220	10:1	mg/l	1.0	2.5	1.0
Sulphate	U	1220	10:1	mg/l	1.0	7.5	3.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Thiocyanate	U	1300	10:1	mg/l	0.50	< 0.50	< 0.50
Sulphide	U	1325	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.41	1.2
Boron (Dissolved)	U	1455	10:1	µg/l	10.0	< 10	< 10
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.53	4.3
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.6	3.8
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.68	3.5
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	2.8	5.4
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	1.3
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	12	24
Naphthalene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	10:1	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	10:1	µg/l	2.0	< 2.0	< 2.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: Land at Boothroyd Lane, Dewsbury, WF13 2LF

Client: Geo Investigate Ltd				**Chemtest Job No.:**		25-23864	25-23864	25-23864	25-23864	25-23864	25-23864
Quotation No.: Q25-37991				**Chemtest Sample ID.:**		2003558	2003559	2003560	2003561	2003562	2003563
Order No.: G25193				*Client Sample Ref.:*		*BH1*	*BH3*	*BH8*	*TPA*	*TPB*	*TPC*
				Client Sample ID.:		*BH1*	*BH3*	*BH8*	*TPA*	*TPB*	*TPC*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.5*	*0.2*	*1*	*0.2*	*0.2*	*0.2*
				Date Sampled:		*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM		DURHAM	DURHAM		
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type		N	2192		N/A	-		-	-		
Asbestos Identification		U	2192		N/A	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		
Moisture		N	2030	%	0.020	8.3	8.9	5.7	9.3	12	12
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture		N	2030		N/A	Sand	Sand	Sand	Sand	Clay	Sand
pH at 20C		M	2010		4.0	8.7	8.6	8.3	8.2	7.4	8.1
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	0.47	0.93	0.42	0.50	< 0.40	0.68
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.054	0.042	0.023	0.034	0.017	0.060
Cyanide (Complex)		M	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50		
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Thiocyanate		M	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.0	2.6	1.9	1.8	1.9	2.4
Arsenic		M	2455	mg/kg	0.5	8.1	9.8	15	15	2.1	8.2
Cadmium		M	2455	mg/kg	0.10	0.65	0.15	0.20	0.23	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	17	36	14	15	11	13
Copper		M	2455	mg/kg	0.50	69	52	24	29	15	21
Mercury		M	2455	mg/kg	0.05	0.11	0.05	0.12	0.16	< 0.05	0.07
Nickel		M	2455	mg/kg	0.50	45	53	20	16	24	16
Lead		M	2455	mg/kg	0.50	250	39	46	69	9.6	26
Selenium		M	2455	mg/kg	0.25	0.99	1.0	0.50	0.55	0.65	0.56
Zinc		M	2455	mg/kg	0.50	370	160	73	70	53	58
Chromium (Trivalent)		N	2490	mg/kg	1.0	17	36	14	15	11	13
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10	< 0.10		< 0.10	< 0.10		
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25		< 0.25	< 0.25		
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	10		8.4	7.7		
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	16		13	14		
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	14		12	13		
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	21		26	22		
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10		< 10	< 10		

Results - Soil

Project: Land at Boothroyd Lane, Dewsbury, WF13 2LF

Client: Geo Investigate Ltd			**Chemtest Job No.:**	25-23864	25-23864	25-23864	25-23864	25-23864	25-23864
Quotation No.: Q25-37991			**Chemtest Sample ID.:**	2003558	2003559	2003560	2003561	2003562	2003563
Order No.: G25193			*Client Sample Ref.:*	*BH1*	*BH3*	*BH8*	*TPA*	*TPB*	*TPC*
			Client Sample ID.:	*BH1*	*BH3*	*BH8*	*TPA*	*TPB*	*TPC*
			Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
			Top Depth (m):	*0.5*	*0.2*	*1*	*0.2*	*0.2*	*0.2*
			Date Sampled:	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*	*30-Jun-2025*
			Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
			Asbestos Lab:	DURHAM		DURHAM	DURHAM		

Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Aliphatic EPH >C40-C44 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10		< 10	< 10		
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	61		59	57		
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	61		59	57		
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05	< 0.05		
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25		< 0.25	< 0.25		
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	20		6.5	3.7		
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	16		22	30		
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	8.5		22	130		
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	2.3		19	180		
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	20		25	55		
Aromatic EPH >C40-C44 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	20		22	24		
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	46		70	340		
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	66		95	400		
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50		< 0.50	< 0.50		
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	110		130	400		
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	130		150	460		
Organic Matter		M	2625	%	0.40	6.9	2.2	8.1	8.2	1.0	3.3
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.28	0.51	< 0.10	0.21
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.46	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.47	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	0.25	0.75	6.7	< 0.10	0.78
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.7	< 0.10	0.16
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.20	1.2	12	< 0.10	0.87
Pyrene		M	2800	mg/kg	0.10	< 0.10	0.20	1.1	10	< 0.10	0.76
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.50	5.2	< 0.10	0.32
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.60	5.0	< 0.10	0.39
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.77	6.0	< 0.10	0.39
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.30	2.2	< 0.10	0.16
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.60	4.8	< 0.10	0.32
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.37	2.9	< 0.10	0.16
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.59	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.44	2.8	< 0.10	0.15
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0	< 2.0	6.9	62	< 2.0	4.7
Total Phenols		M	2920	mg/kg	0.10	0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID	*Clients Sample Ref:*	*Clients Sample ID:*	*Clients Reference:*	*Sampled Date:*	Deviation Code(s):	Containers Received:
2003558	*BH1*	*BH1*		*30-Jun-2025*	B	Amber Glass 250ml
2003558	*BH1*	*BH1*		*30-Jun-2025*	B	Amber Glass 60ml
2003558	*BH1*	*BH1*		*30-Jun-2025*	B	Plastic Tub 500g
2003559	*BH3*	*BH3*		*30-Jun-2025*	B	Amber Glass 250ml
2003559	*BH3*	*BH3*		*30-Jun-2025*	B	Plastic Tub 500g
2003560	*BH8*	*BH8*		*30-Jun-2025*	B	Amber Glass 250ml
2003560	*BH8*	*BH8*		*30-Jun-2025*	B	Amber Glass 60ml
2003560	*BH8*	*BH8*		*30-Jun-2025*	B	Plastic Tub 500g
2003561	*TPA*	*TPA*		*30-Jun-2025*	B	Amber Glass 250ml
2003561	*TPA*	*TPA*		*30-Jun-2025*	B	Amber Glass 60ml
2003561	*TPA*	*TPA*		*30-Jun-2025*	B	Plastic Tub 500g
2003562	*TPB*	*TPB*		*30-Jun-2025*	B	Amber Glass 250ml
2003562	*TPB*	*TPB*		*30-Jun-2025*	B	Plastic Tub 500g
2003563	*TPC*	*TPC*		*30-Jun-2025*	B	Amber Glass 250ml
2003563	*TPC*	*TPC*		*30-Jun-2025*	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.	PL LE GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW SW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX 4

Ground Gas Monitoring Results

Job Number	G25193
Client	Horizon Healthcare Homes Ltd
Site	Boothroyd Lane, Dewsbury, WF13 2LF
Instrument	GFM 406 + 410

Key	
WL	Water Logged
<0.1	Below Detectable Levels
NB	No Bung
WD/I	Well destroyed / inaccessible

Monitoring Personal	Liam	Date	20/06/2025	Weather	Cloudy	Temperature	25°c	Starting Pressure		1020	Pressure Trend	Falling
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1020	0.0	0	0.8	14.5				0	0
BH6	Fine	<0.1	1020	0.0	0	0.4	14.4				0	0
BH5	Fine	<0.1	1020	0.0	0	1.0	14.3				0	0

Monitoring Personal	Liam	Date	24/06/2025	Weather	Drizzle	Temperature	18°c	Starting Pressure		1007	Pressure Trend	Steady
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1007	0.0	0	1.2	14.4				0	0
BH6	Fine	<0.1	1007	0.0	0	0.6	14.9				0	0
BH5	Fine	<0.1	1007	0.0	0	1.5	14.7				0	0

Monitoring Personal	Liam	Date	27/06/2025	Weather	Cloudy	Temperature	22°c	Starting Pressure		1015	Pressure Trend	Steady
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1015	0.0	0	0.6	14.8				0	0
BH6	Fine	<0.1	1015	0.0	0	0.8	14.6				0	0
BH5	Fine	<0.1	1015	0.0	0	1.3	14.1				0	0

Monitoring Personal	Liam	Date	01/07/2025	Weather	Cloudy	Temperature	22°c	Starting Pressure		1015	Pressure Trend	Steady
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1015	0.0	0	1.0	14.2				0	0
BH6	Fine	<0.1	1015	0.0	0	0.5	14.1				0	0
BH5	Fine	<0.1	1015	0.0	0	0.9	14.2				0	0

Monitoring Personal	Liam	Date	08/07/2025	Weather	Cloudy	Temperature	17°c	Starting Pressure		1018	Pressure Trend	Rising
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1018	0.0	0	0.9	14.5				0	0
BH6	Fine	<0.1	1018	0.0	0	0.3	14.7				0	0
BH5	Fine	<0.1	1018	0.0	0	0.1	14.2				0	0

Monitoring Personal	Liam	Date	14/07/2025	Weather	Cloudy	Temperature	19°c	Starting Pressure		1009	Pressure Trend	Steady
Monitoring Point	Well condition	Flow range (l/hr)	Atmospheric Pressure (mb)	Methane % (v/v)	Methane % LEL	Carbon dioxide % (v/v)	Oxygen % (v/v)	Water Level (mbgl)	Depth of Well (m)	Volume of gas in well (m^3)	Hydrogen Suphide (ppm)	Carbon Monoxide (ppm)
BH1	Fine	<0.1	1009	0.0	0	0.1	14.5				0	0
BH6	Fine	<0.1	1009	0.0	0	0.3	15.4				0	0
BH5	Fine	<0.1	1009	0.0	0	0.2	15.1				0	0

END OF APPENDICES