GEO Environmental Engineering

PHASE 2: GROUND INVESTIGATION REPORT

PROPOSED RESIDENTIAL DWELLING & AGRICULTURAL BARN

DEVELOPMENT AT NEWHOUSE FARM

STATION ROAD, DRIGG

CUMBRIA, CA19 1XG

FOR

RH IRVING CONSTRUCTION LIMITED

GEO Environmental Engineering

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DOCUMENT CONTROL SHEET

Report Ref:	GEO2025-6701
Client Title:	RH Irving Construction Limited
Consultant:	Avison Young
Report Type:	Phase 2 Ground Investigation Report (GIR) v1
Report Date:	3rd December 2025
Report Tracking:	3rd December 2025 – Preliminary Draft Report v1 Issued for Design Team and Regulator Review
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1.0 Introduction

1.1 Brief

GEO Environmental Engineering Ltd (GEO) were commissioned by RH Irving Construction Limited to carry out a programme of Phase 2 ground investigation works at Newhouse Farm, located on Station Road in the Cumbrian village of Drigg, to facilitate proposals to redevelop the site with a new farmhouse (residential dwelling) and 2 no. new agricultural barns.

This investigation has been carried out to determine the ground conditions across the site to aid with the design of new building foundations, road infrastructure and drainage, and to assess the risks to human health and environmental receptors from potential ground contamination and hazardous ground gases.

1.2 Proposed Development

Based on the proposed development plans provided to GEO, it is understood that the site will be developed for a residential and commercial end use, comprising the construction of a new farmhouse (residential dwelling) and 2 no. new agricultural barns. A copy of the proposed development plan can be seen in Appendix I.

Further details relating to the proposed development can be obtained from the Design Team / Consultant.

1.3 Site Location and Description

The site, occupying an area of c.0.77 ha is located on the corner of the B5344 and Station Road, c.260m northeast of Drigg train station as indicated on the site location plan included in Appendix I. Access to the site is from Station Road to the west.

- National Grid Reference: 306575 499024
- Post Code: CA19 1XG (approximate only)

The site area is currently undeveloped, following recent demolition of the previous farmhouse and associated agricultural barns / structures. An existing wooden clad portal-framed barn, used for agricultural storage (farm machinery, animal feed, and farming supplies), is still in use located to the southeast of the proposed development area.

Towards the north and northeastern section of the site, beyond the boundary established by the heras fencing and in the vicinity of the former sheep pen, a substantial pile of demolition rubble is evident. While the rubble generally sits at ground level, it remains possible that this material is infilling a previously excavated area. The nature of the excavation suggests it may have originally functioned as a sheep dipping site.

The site undulates very gently with a slight fall in level from north to south. A topographical survey has not been provided; however, Ordnance Survey data suggests that ground levels are between c.16m and c.17m AOD. It would be prudent to acquire a topographical survey of the site prior to development.

1.4 Other Reports/Studies

This ground investigation report (GIR) should be read in conjunction with the Phase 1 Desk Top Study (DTS – Preliminary Environmental Risk Assessment) report compiled for the site by GEO, reference GEO2025-6701, dated August 2025, which considers the new development proposals. The findings contained within the DTS report were used to aid the design and scope of the intrusive investigation works carried out on site by GEO.

2.0 Ground Investigation Reporting

2.1 Ground Investigation Aims and Objectives

The overall objective of this ground investigation is to provide information relating to the following.

- Identify the ground conditions below the site area to assess the geotechnical properties associated with the existing made ground and superficial deposits, to assist with determining suitable and appropriate foundation recommendations for the proposed development
- Identify the groundwater conditions across the site area
- Determine the ground gas regime and required protection measures for the proposed development
- Identify potential sources of ground contamination and determine the levels of contamination within the shallow soil deposits, to assess the potential risks posed to human health (i.e. future site users) where exposure pathways are present post completion of the proposed development, and also the surrounding environment (Controlled Waters)
- Determine the scope of any further investigation works or remediation measures required for the site prior to commencing with any future development works

2.2 Guidelines, Codes of Practice and Third-Party Accreditations

This report contains information relating to the geotechnical properties of the soils encountered on site to aid foundation and highway design by a Structural Engineer. The report also incorporates a Level 1 Ground Contamination and Ground Gas Risk Assessment for Human Health (Generic Quantitative Risk Assessment – GQRA).

The laboratory testing (geotechnical and ground contamination) was completed by UKAS and MCERTS accredited laboratories with details given in Sections 6, with copies of the test reports contained within Appendix III.

This GIR has been completed in general accordance with the following documents.

- Land Contamination Risk Management Stages 1 to 4 (LCRM – www.gov.uk) – June 2025
- BS10175:2011 + A2:2017: Code of Practice for the Investigation of Potentially Contaminated Sites
- BS5930:2015 + A1:2020: Code of Practice for Site Investigations
- BS1377-1 to 9:1990 to 2025: Methods of test for soils for civil engineering purposes
- BS8485: 2015 + A1:2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- BS8576: 2013: Guidance on Ground Gas Investigations
- CIRIA Report C665; Assessing risks posed by hazardous ground gases to buildings, 2015
- BR211: 2023 Radon, Guidance on protective measures for new buildings
- BS EN 1997-1:2024: The Standard for Eurocode 7. Geotechnical design – General Rules
- BS EN 1997-2:2007: The Standard for Eurocode 7. Geotechnical design – Ground investigation and testing
- UK Specification for Ground Investigation, 2nd Edition. Site Investigation Steering Group, 2011
- Effective Site Investigation. Site Investigation Steering Group, 2013
- SP1010 Development of Category 4 Screening Levels Main Report, 2014
- The LQM/CIEH S4UL's for Human Health Risk Assessment, 2015

2.3 Ground Investigation Limitations of Use

When considering the scope of works completed for the development proposals, any features or issue not specifically mentioned cannot be assumed to have been covered.

Although every effort is made to ensure that a full and comprehensive investigation is completed, it should always be borne in mind that ground conditions have the potential to vary between exploratory hole locations and it is recommended that the developer adopts a "watching brief" during any future development works to ensure that any potential variations encountered are identified and dealt with in an appropriate manner. The GIR and its contents are limited to the boundaries of the site, as indicated on the plans contained in Appendix I.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/or other key stakeholders, including warranty providers in order to seek their approval of the findings prior to undertaking any development works.

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2.4 Consideration for Residential and Commercial End Use

It is understood that the site will be developed for a residential and commercial end use, comprising a new farmhouse (residential dwelling) and 2 no. agricultural barns. Consequently, when considering the intended development, the site will be considered suitable for occupation by assessing levels of ground contamination using a Level 1 Generic Quantitative Risk Assessment (GQRA).

A GQRA provides details of potential future risks to Human Health (proposed end users) and Controlled Waters from any contamination which may be identified on site in made ground deposits, topsoil or natural soils or impacted groundwater.

For the human health risk assessment, it is considered that future residents occupying the new farmhouse will be subjected to the greatest exposure periods and consequently the most risk. Therefore, in accordance with current guidance and legislation an end use classification of *Residential with homegrown produce* has been considered most appropriate for this proposed site area of the farmhouse. However, below the area of the proposed agricultural barns, this could be considered as a separate averaging area, where the exposure risk is considered much less compared to a residential end use. Therefore, an end use classification of *Commercial* can be considered more appropriate for this particular area of the site.

3.0 Ground Investigation Fieldwork

3.1 Intrusive Investigation Fieldworks Summary

The ground investigation works, which were designed by RH Irving Construction Limited, were completed between the 26th and 28th August 2025, and the exploratory holes (boreholes & soakaway test trial pits) were positioned below the proposed footprints of the new farmhouse and agriculture barns to provide general site coverage, taking into consideration the locations of buried utilities. As part of the investigation works, and for the purposes of health and safety, a programme of utility clearance was carried out prior to commencing with the investigation works.

The site investigation location plan is provided in Appendix I, and the ground investigation works comprised the following.

- 8 No. Mini-Percussive Windowless Sampling Boreholes (BH01 to BH08) to depths of between 3.88m and 5.00m bgl
- 2 No. Mechanically Excavated Trial Pits (SAT01 and SAT02) to depths of between 2.10m and 2.30m bgl to enable soakaway tests to be undertaken
- 2 no. Hand Excavated Trial Holes (HP01 and HP02) to depths of 0.45m and 0.50m
- Installation of 5 No. Gas and Groundwater Monitoring Wells (BH01 to BH03)
    - Gas and groundwater monitoring (5 no. visits completed to date)
- In-situ geotechnical testing (Standard Penetration Tests (SPT) and Hand Shear Vane Tests in the boreholes)
- Laboratory based geotechnical testing
- Laboratory chemical screening of soil samples

Site supervision was provided by a qualified and experienced Geo-Environmental Engineer. The fieldworks were undertaken in general accordance with guidelines and codes of practice given in Section 2.2.

At each exploratory hole location, the surfacing type, made ground, natural ground and groundwater conditions were observed, along with in-situ testing undertaken and samples recovered. Details of the ground conditions are included on the exploratory hole logs which are included in Appendix II, together with other relevant ground investigation data. The results of any in-situ geotechnical testing (i.e. SPTs and shear strength) that were carried out are presented on the appropriate logs and record sheets contained in Appendix II.

The geotechnical and chemical laboratory test results are provided in Appendix III. All depths included in the report are in metres below ground level (m bgl), unless stated otherwise.

The ground investigation findings and recommendations are based on current site levels. If as part of the finalised design, site levels are to be reduced, then it would be recommended to complete deeper investigation works at that time to confirm the deeper underlying ground conditions.

4.0 Ground and Groundwater Conditions

4.1 General

The following section provides a summary of the ground conditions encountered across the site during the investigation. Reference should be made to the exploratory hole logs included in Appendix II for detailed descriptions of the strata and groundwater conditions.

All depths are reported in metres below ground level (m bgl) unless stated otherwise.

4.1.1 Made Ground and Topsoil

The presence of topsoil, comprising dark brown silty, sandy soil was recorded at the locations of HP01, HP02 and BH08, ranging in thickness between 0.20m to at least 0.45m.

The site had been subject to demolition of the former farmhouse and agricultural farm buildings prior to the ground investigation commencing, and the majority of the demolition materials has been removed from site. Made ground deposits were recorded, ranging in thickness between 0.05m up to 0.90m comprising typically dark brown soil, gravelly sand , sandy gravel and pebbles, and occasional limestone, brick, concrete and slate. The made ground was locally deeper at the location of SAT02, comprising dark brown sandy gravelly soil with occasional fragments of brick, sandstone, metal and timber. At this particular location an odour of solvent / creosote and / or hydrocarbons was noted between the depths of 0.60m to 0.90m.

Samples of the topsoil and made ground deposits have been recovered for chemical laboratory screening to determine if they represent a risk to human health within a residential and commercial end-use setting.

With the exception of SAT02, generally no visual or olfactory evidence of fuel/oil contamination (no staining, odour or free product), ‘ashy’ type deposits (coal, ash, cinder, etc.) or asbestos containing materials (ACM’s) was encountered. A fragment of suspected asbestos cement sheeting was recovered from the ground surface near to the location of BH07.

4.1.2 Natural Drift Deposits

The natural superficial deposits encountered across the site are noted to be extremely variable in composition and also strength / density, comprising very loose through to dense sand and gravel, and very soft through to stiff clay deposits. These deposits are felt to be representative of Glacial / Devensian Till. The full depth of the superficial deposits was not proven below the site area (at least 5.00m bgl).

During the investigation period the natural sand deposits were noted to be unstable within the boreholes and at the location of SAT02, between the depths of 1.15m and 3.20m. Adequate lateral trench support will be required for excavations undertaken below 1.20m, to prevent trench wall collapse or over excavation, as well as to create a safe working environment, and any excavations on this site should remain open for as short a period as possible, since the natural deposits could be susceptible to deterioration if left open to the natural elements for any significant period of time.

4.1.3 Solid (Bedrock) Geology

The solid geology / bedrock deposits, recorded as Sellafield Sandstone Member, were not encountered during this ground investigation.

4.2 Groundwater

The natural sand deposits were noted to be wet between the depths of 1.00m and 3.00m, and ingresses of groundwater / groundwater strikes were recorded within the natural deposits ranging between the depths of 0.60m and 3.00m. The water level was noted to marginally rise to 1.50m within BH08.

It is likely that the 'wet' sand deposits will create 'running sand' conditions to occur where excavations are left open for a long period of time.

Groundwater monitoring of the installations, placed in boreholes BHs 01, 02, 04, 06 & 07 to depths of between 3.00m and 5.00m bgl, has been carried out on five occasions between September and November 2025 to date. Standing water levels have been recorded ranging between ground level and 4.85m bgl.

Given the ground conditions and the groundwater observations noted during the investigation works, it is likely that the groundwater ingresses recorded within the trial pits and the standing water levels recorded at the borehole / monitoring well locations is representative of a shallow groundwater within the sand natural deposits. As such, it would be considered prudent to allow for the introduction of temporary groundwater control techniques (i.e. sump pumping and the like) during the construction phase of works to ensure excavations remain dry and stable, and to take care of any ingresses of groundwater which may occur, especially during the wetter periods of the year. It should also be noted that instability within such excavations could occur because of water inflow. Where water is present, granular deposits have the potential to flow in excavations (e.g., running sands).

4.3 General Comments

During the design phase, if site level variations (e.g., areas of cut) are proposed that go beyond the depth of penetration of the current boreholes and trial pits then it is recommended that the design team consider supplementary deeper investigation.

5.0 Exploratory Hole Testing

In-situ site testing and monitoring was generally undertaken in accordance with BS 5930:2015+A1:2020, BS1377-9:1990 and BS EN 1997-2:2007 (Eurocode 7), and BS8485: 2015 + A1: 2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings and CIRIA Report C665: 2015.

5.1 Insitu Hand Shear Vane Tests

Insitu hand shear vane tests were carried out within the boreholes, where feasible within the natural clay deposits, to confirm field descriptions and to aid foundation design. The results of the hand shear vane tests are presented on the borehole logs which are included in Appendix II.

The shear vane test results within the clay deposits have recorded undrained shear strength values (C_u) ranging between 15 and 116kN/m^2, which is indicative of very low, low and medium and high strength strata.

5.2 Standard Penetration Tests

5.2.1 Standard Penetration Test Methodology

To determine the relative density and strength of the underlying soils, Standard Penetration Tests (SPT's) were completed within the boreholes. The test uses a "split spoon" sample tube (external diameter of 50mm, internal diameter of 35mm and a length of around 650mm) driven from the base of the borehole as it is progressed, usually at 1.00m spacing's/intervals.

The sample tube is driven by blows of a slide hammer with a weight of 63.5kg falling over a 760mm drop. The sample tube is driven 150mm into the ground (seating blows) and then the number of blows needed for the tube to penetrate each 75mm increment up to a depth of 450mm is recorded.

The number of blows for the final 300mm of penetration is referred to as the "standard penetration resistance" or "N" value, which is presented on the exploratory hole logs adjacent to each sample depth. Where 50 blows are insufficient to advance the test through a 75mm interval the amount of penetration after 50 blows is recorded and the test is referred to as a "refusal".

5.2.2 Standard Penetration Test Results

In-situ Standard Penetration Tests (SPTs) were completed in the boreholes at depths of between 1.00m and 1.80m bgl. The results of the SPTs are presented on the borehole logs which are included in Appendix II.

Tests completed within the natural gravel deposits have recorded 'N' values ranging between 29 and 35, along with blow counts of 50 for limited penetration, which is indicative of medium dense, dense and very strata. It is possible that the high blow counts recorded within the gravel deposits has been influenced by the presence of cobbles causing obstructions.

5.3 Ground Gas Monitoring

To assess the on-site potential for hazardous ground gases, the boreholes (BHs 01, 02, 04, 06 and 07) have been installed with ground gas monitoring wells to facilitate a period of ground gas monitoring.

The boreholes were installed to depths of between 3.00m and 5.00m bgl with a 63mm diameter HDPE standpipe. The top section of the well comprised solid pipe surrounded by a bentonite seal and the lower section comprised slotted pipe and a gravel filter. A plastic cap was placed the at the base of the well and the rubber bung and gas valve were fitted at the surface.

The installation details are presented on the borehole logs in Appendix II. Monitoring has been undertaken using a Gas Data GFM436 soil gas analyser with integral flow meter, and a Geotechnical Instruments electronic dip-meter.

The monitoring and risk assessment has been completed in accordance with BS8485:2015 + A19:2019 – Code of practice for the characterisation and remediation from ground gas affected developments, CIRIA Report C665, November 2015, and BS8576:2013 – Guidance on investigations for ground gas, and is based on the following criteria.

- The proposed residential development (most sensitive end use proposed on this site) has been classified as high sensitivity
- The risk associated with the generation potential of a source has been assessed as very low based on the findings of the Phase 1 report and these ground investigation works
- In accordance with Tables 5.5a and 5.5b in CIRIA C665, the typical / idealised period of monitoring for this site has been determined as 6 no. recorded readings undertaken over a minimum period of 3 months
- Monitoring visits are undertaken to target and correlate with the worst-case conditions for ground gas emissions to occur, comprising falling atmospheric pressure trends and low atmospheric pressures. Monitoring of the weather conditions and predicted atmospheric pressures were carried out up to 72 hours in advance of the monitoring visits, in order that a reasonable period of data is obtained to determine atmospheric trends, and to target the worst-case scenario.

The wells have been monitored on 6 no. occasions for a minimum of 3 months between September and December 2025 in general accordance with CIRIA C665 (Table 5.5a and 5.5b). The results of monitoring are included in the Ground Gas Monitoring Record Sheets included in Appendix II. The ground gas risk assessment based on the results obtained is presented in Section 8.3 of this report.

5.4 Soakaway Testing

Two mechanically excavated trial pits (SAT01 and SAT02) were sunk to depths of between 2.10m and 2.30m below existing ground levels, to enable soakaway tests to be undertaken in general accordance with the BRE Digest 365 guidance document, to determine the soil infiltration rate for the natural deposits present across the site.

No groundwater was encountered in SAT01 due to the presence of stiff clay deposits, however a groundwater ingress was noted at the base of the excavation of SAT02 on completion with a standing water level recorded at 1.60m prior to commencing with the soakaway test. The side walls of SAT02 were noted to collapse between the depths of 1.15m and 1.90m.

Once the trial pits were completed, water was added to initiate the soakaway testing. Water was supplied from a c.11,000-litre towed water bowser, with water being emptied into the soakaway test pits at a rapid rate, with the aim of filling the pits within a short period of time so that a sufficient head of water could be reached.

To calculate the soil infiltration rate (f) for the materials present on and across the site area, the time (in seconds) is required for the water to discharge away from the test pit between the 75% to 25% effective depth of the water added into the test pit, as per the BRE 365 methodology. Typically, the test pits should be filled three times in accordance with the BRE365 methodology.

At both locations (SAT01 and SAT02) the water levels failed to pass the 75% effective depth over a monitoring period of c.4hrs, as such a negligible discharge of water was observed and therefore no infiltration rate could be calculated. The deposits present below the site are not considered suitable for the direct discharge of water to the ground based on these results.

As such alternative methods for the discharge of surface water will need to be considered, such as discharge into a surface water course (if possible) or into the existing public sewer infrastructure likely present adjacent to the site. It is likely that some form of attenuation and restricted discharge flow rate will need to be accommodated to allow discharge into the sewer infrastructure.

6.0 Laboratory Testing

6.1 Geotechnical Testing

Geotechnical testing was completed in general accordance with BS1377-1, 2 & 4 by the following UKAS and MCERTS accredited laboratory.

- Northumberland County Council Highways Laboratory, Cramlington, Northumberland (NCC)

Samples of the materials recovered from the boreholes at depths of between 0.05m and 1.90m bgl have been subjected to the following laboratory based geotechnical tests.

- Moisture Content
- Atterberg Test (Determination of Liquid and Plastic Limit)
- Particle Size Distribution (PSD)

The results of the testing are summarised in section 7 and presented in the NCC report (ref: S2170), a copy of which is contained in Appendix III.

6.2 Chemical Screening

6.2.1 Determination of pH and Water-Soluble Sulphate

Testing was completed in general accordance with BS1377-1:2016 and BS1377-3:2018+A1:2021 by the following UKAS and MCERTS accredited laboratory.

- Normec DETS Limited of Consett, County Durham (DETS)

In order to determine the correct concrete classification for buried structures (foundations, etc.), the following samples were scheduled for laboratory pH and water-soluble sulphate (SO_4) screening.

- 3 No. samples of topsoil (up to depths of 0.45m bgl)
- 7 No. samples of the made ground deposits (0.00m to 0.90m bgl)
- 6 No. samples of the natural drift deposits (between depths of 0.20m to 1.30m bgl)

The results of the testing are summarised in section 7 and are presented in the DETS report (ref: 25-20360) a copy of which is contained in Appendix III.

6.2.2 Contamination Testing for Human Health

To enable the completion of a Level 1 Generic Quantitative Risk Assessment (GQRA) for Human Health, the following samples were scheduled for chemical screening.

- 3 No. samples of topsoil (up to depths of 0.45m bgl)
- 7 No. samples of the made ground deposits (0.00m to 0.90m bgl)

The samples were subjected to analysis at the following UKAS and MCERTS accredited laboratory.

- Normec DETS Limited of Consett, County Durham (DETS)

Potential Contaminants of Concern (PCOC's) have been determined for the development area based on the descriptions of the materials encountered within the exploratory holes and the recorded site history. The samples have been screened for the contaminants as detailed on the following page.

- **Inorganic Soil Suite (Human Health Risk Assessment):** Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium and Zinc), Cyanide and Total Organic Carbon
- **Organic Soil Suite (Human Health Risk Assessment):** Speciated Polycyclic Aromatic Hydrocarbons (PAHs – USEPA 16) and Petroleum Hydrocarbons (Aliphatic & Aromatic Splits C5-C44)
- **Other:** Asbestos, Organochlorine Pesticides (OCPs) and Organophosphorus Pesticides (OPPs)

The full catalogue of soil screening results and test detection limits can be seen in the DETS report (ref: 25-16280) contained in Appendix III.

No visual or olfactory evidence of organic contamination, 'ashy' type deposits (coal, ash, cinder, etc.) or asbestos containing materials (ACMs) was identified during the fieldworks.

6.2.3 Water Pipe Selection (UKWIR Contamination Testing)

To enable the completion of a Water Pipe Selection risk assessment, the following samples were scheduled for chemical screening.

- 2 No. samples of topsoil / made ground and natural deposits (between depths of 0.00m to 1.30m bgl)

The samples were subjected to analysis at the following UKAS and MCERTS accredited laboratory.

- Normec DETS Limited of Consett, County Durham (DETS)

The samples have been screened for the contaminants as detailed below.

- **UKWIR Testing Suite:** pH value, Conductivity, Redox Potential, Extractable Petroleum Hydrocarbons (EPH – C10-C16 and C16-C40), BTEX, MTBE, Speciated & Total VOCs and SVOCs, Phenol, Cresols & Chlorinated Phenols, and Tentatively Identified Compounds (Ethers, Ketones, Aldehydes, Amines & Nitrobenzene)

The full catalogue of soil screening results and test detection limits can be seen in the DETS report (ref: 25-20360) contained in Appendix III.

6.3 Controlled Water Environment Risk Assessment

The Phase 1: Desk top study element of work completed, has indicated that the risk to Controlled Waters was considered low based on the site's history and environmental setting (Superficial deposits classified as a Secondary Aquifer - Undifferentiated). The deeper bedrock deposits (Sellafield Sandstone) are classified as a Principal Aquifer. The depth to the sandstone and Principal Aquifer is unknown at this time.

During the intrusive site works, no evidence of site wide significant heavy / gross or potentially mobile contaminants was encountered, with the exception of SAT02. However, our risk rating remains low, and as such no further assessment is deemed to be required with respect to Controlled Waters.

7.0 Geotechnical Analysis

7.1 Determination of Moisture Content and Atterberg Limits

In total 5 no. samples of the natural clay deposits recovered from the borehole at depths of between 0.05m and 1.90m bgl have been scheduled for classification tests to determine their moisture content, and liquid & plastic limits. The results of the testing are contained in the NCC report (ref; S2170) presented in Appendix III and are summarised below.

- Natural moisture contents ranged between 12.0% and 22.6%
- Liquid limits of between 26% and 29%, and plastic limits of between 13% and 18% were recorded
- Plasticity indices of between 10% and 15% are noted
- The results indicate clays of low plasticity

When taking into account the amount passing the 425um sieve, the clays display a negligible and low volume change potential. As such the clay deposits present are unlikely to undergo significant changes in volume if large changes in their natural water content were to occur due to seasonal variations, and therefore if new foundations were to be placed within these clay deposits they would need to be placed at a minimum depth of 0.75m below finished ground levels. It should be noted that low moisture contents were recorded at shallow depth at the location of BH02 (c.12%), which is within close proximity to an existing large mature tree, and therefore these deposits appear to display characteristics of desiccation.

Consideration will need to be given to any buildings which are placed within close proximity to existing, recently removed or proposed trees, in order to avoid the effects of future shrinkage and swelling of the clay deposits. As such the minimum foundation depth may need to be increased to take this into account and reference should be made to BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.

7.2 Determination of Particle Size Distribution (PSD)

In total 2 no. samples of the natural granular deposits recovered from the boreholes at depths of between 0.25m and 1.00m bgl were scheduled for classification tests to determine their particle size distribution, including sedimentation to determine the proportion of clay and silt present. The results of the testing are contained in the NCC report (ref. S2170) presented in Appendix III and is summarised below.

The results of the PSD testing have identified the presence of poorly graded deposits, comprising slightly clayey/silty and clayey silty fine to medium grained sand.

7.3 Determination of pH and Water-Soluble Sulphate

As indicated in Section 6, selected samples of the topsoil, made ground and natural drift deposits have been screened to determine their pH value and soluble sulphate potential to aid the design of buried concrete. The results of the chemical screening are presented in the DETS report (ref. 25-20360) contained in Appendix III.

From the results, the following observations can be seen.

- pH values in the soils ranged from 6.2 to 8.4 (slightly acidic to alkali)
- Water Soluble Sulphate (SO_4) levels were recorded as ranging from <10mg/l to 110mg/l

In accordance with BRE Special Digest 1: 2005, Concrete in Aggressive Ground, the soluble sulphate results recorded equate to a Design Sulphate class of DS-1. With respect to the pH levels, the results indicate slightly acidic ground conditions, therefore based on brownfield locations and mobile water ground conditions, the site should be assessed as an ACEC class of AC-2z.

8.0 Generic Quantitative Risk Assessment (GQRA)

8.1 Methodology for Assessing Risks to Human Health

Within the UK, the current framework for assessing potential ground contamination utilises the Environment Agency's Contaminated Land Exposure Assessment (CLEA) model (dated 2020), and as set out by Land Contamination Risk Management Stages 1 to 4, June 2025 and the Department of the Environment, Farming and Rural Affairs (DEFRA) Contaminated Land Statutory Guidance, dated April 2012. This comprises of using the established pollutant linkage model of *Source – Pathway – Receptor*. For a risk to be present to the proposed end user (*Receptor*) there must be an identified *Source* and a plausible *Pathway*. Where one or more of the links are missing then the risk is negated. In order for the land to be classified as contaminated under Part IIA of the Environmental Protection Act (EPA) 1990 all three elements of the pollutant linkage must be present.

A human health risk assessment can be completed using the contamination levels recorded in the soils by comparing the values against published Generic Assessment Criteria (GAC), such as Land Quality Management (LQM) and Chartered Institute of Environmental Health (CIEH) S4UL Values, CL:AIRE/DEFRA Category 4 Screening Levels (C4SLs), and Atkins ATRISK^{SOIL} Soil Screening Values (SSV's). The guidelines are generally based on the land uses as outlined below.

- *Residential (with or without homegrown produce)*
- *Commercial*
- *Allotments*
- *Public Open Space (Residential or Park)*

It is anticipated that the proposed development will incorporate the construction of a new farmhouse and 2 no. agricultural barns. Therefore, for the purposes of this Human Health ground contamination risk assessment, the maximum site recorded values for the soil samples have been compared to the GACs for the most sensitive end use classification of *Residential with homegrown produce*, to determine if a potential risk is present to proposed end users.

8.2 Human Health Risk Assessment – Comparison with Guidance Levels

8.2.1 Inorganic Contaminants – Soil

The maximum concentration values for each inorganic analyte have been compared to the most relevant published Generic Assessment Criteria (GAC) as part of the Maximum Value Test. The GACs have been selected using the following guidance documents.

- LQM/CIEH S4UL 2015 (Residential with homegrown produce)
- CL:AIRE/DEFRA Cat 4 Screening Levels C4SL (Residential with home-grown produce)
- Atkins ATRISK Screening Values (Residential)

As discussed in section 8.1, the contaminant concentrations have been assessed against the appropriate GAC for a Residential end use. A summary of the findings can be seen in the Table below and continues on the following page.

Generic Analytes	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Arsenic	37(1)	10	**280 (SAT02)**
Cadmium	11(1)	10	0.6
Chromium III	910(1)	10	13
Chromium VI	6(1)	10	<1.0
Copper	2,400(1)	10	130

Generic Analytes (Cont'd)	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Lead	200[2]	10	**270 (SAT01)**
Mercury	40[1]	10	0.15
Nickel	130[1]	10	36
Selenium	250[1]	10	0.6
Zinc	3,700[1]	10	300
Cyanide	34[3]	10	0.7

[1] = The LQM / CIEH Suitable 4 Use Levels (Residential with homegrown produce end-use), [2] = CL:AIRE C4SLs (Residential with home-grown produce end-use), [3] = ATRISK^{SOIL} SSV (2015),

Based on the results of the risk assessment, an elevated concentration of Arsenic and Lead has been recorded at the locations of SAT02 and SAT01 respectively, which exceed the assessment criteria values chosen for this site based on a Residential end use. However, the location of SAT02 is positioned within the footprint of the new proposed agricultural barns, and the assessment criteria for this portion of the site if considered as a Commercial end use would fall below the assessment value of 640mg/kg. As such, the elevated Arsenic at this location is not considered to pose a significant risk to human health.

However, the made ground recorded at the location of SAT01 poses a risk to human health. Therefore, remediation will be required to negate the risks to future end users. When considering the contaminants identified, a clean cover barrier system should be considered in areas of gardens and soft landscaping positioned in this locality of the site. Alternatively, when considering the thickness of the made ground (0.20m) at this location it may be practical to carry out a programme of delineation, followed by the removal of the impact materials to negate the requirement for a clean cover barrier system.

It should be noted that the topsoil deposits sampled at the locations of HP01 and HP02, are considered suitable for re-use / remain in a residential setting.

8.2.2 Organic Contaminants – Soil

The maximum concentration values for the organic analytes tested for (i.e. TPH, PAH congeners, Phenols and Pesticides) have been compared to the most relevant and appropriate published guidance values (generic assessment criteria) as part of the Maximum Value Test. The GACs have been selected using the following guidance document.

- LQM/CIEH S4UL 2015 (Residential with homegrown produce)

Taking in to account the average TOC of the soils on the site, this assessment has been completed utilising a 2.5% SOM. A summary of the findings can be seen in the Table below and on the following page.

PAH Congeners	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Acenaphthene	510[1]	10	<0.1
Acenaphthylene	420[1]	10	0.16
Anthracene	5,400[1]	10	0.18
Benzo(a)anthracene	11[1]	10	0.91
Benzo(a)pyrene	2.7[1]	10	0.92
Benzo(b)fluoranthene	3.3[1]	10	0.74
Benzo(ghi)perylene	340[1]	10	0.55
Benzo(k)fluoranthene	93[1]	10	0.48
Chrysene	22[1]	10	0.93
Dibenzo(ah)anthracene	0.28[1]	10	0.11
Fluoranthene	560[1]	10	2.1
Fluorene	400[1]	10	<0.1
Indeno(123cd)pyrene	36[1]	10	1

[1] = The LQM / CIEH Suitable 4 Use Levels (Residential with homegrown produce end-use)

PAH Congeners (Cont'd)	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Naphthalene	5.6(1)	10	0.16
Phenanthrene	220(1)	10	0.52
Pyrene	1,200(1)	10	1.7
Petroleum Hydrocarbons			
Aliphatic EC 5-6	78(1)	5	<0.01
Aliphatic EC >6-8	230(1)	5	<0.01
Aliphatic EC >8-10	65(1)	5	<0.01
Aliphatic EC >10-12	330(1)	5	<1.5
Aliphatic EC >12-16	2,400(1)	5	<1.2
Aliphatic EC >16-35	92,000(1)	5	<3.4
Aliphatic EC >35-44	92,000(1)	5	<3.4
Aromatic EC 5-7	140(1)	5	<0.01
Aromatic EC >7-8	290(1)	5	<0.01
Aromatic EC >8-10	83(1)	5	<0.01
Aromatic EC >10-12	180(1)	5	<0.9
Aromatic EC >12-16	330(1)	5	<0.5
Aromatic EC >16-21	540(1)	5	7.37
Aromatic EC >21-35	1,500(1)	5	73.85
Aromatic EC >35-44	1,500(1)	5	172.25
Phenols			
Total Phenols	-	1	<0.5
OCPs & OPPs			
OCPs	-	1	<0.1
OPPs	-	1	<0.1

(1) = The LQM / CIEH Suitable 4 Use Levels (Residential with homegrown produce end-use)

Based on the results of the above risk assessment, none of the organic contaminant concentrations tested for on this site exceed the assessment criteria based on a Residential end use, and as such do not pose a risk to human health.

8.2.3 Determination of presence of Asbestos – Soil

In total 10 no. samples of the topsoil and made ground have been subjected to laboratory microscopic analysis to determine the presence or not of loose asbestos fibres or Asbestos Containing Materials (ACMs) in accordance with the methodology within HSG 248. In addition, a fragment of suspected asbestos cement sheeting was recovered from the ground surface near to the location of BH07.

Of the samples tested, one sample (BH08) was identified to contain the presence of Chrysotile, in the form of fibre bundles. This sample was taken forward to quantify the amount of asbestos present. The result returned a concentration of 0.002 *w/*w (marginally above the limit of detection – 0.001%). The fragment of cementitious sheet recovered from near to BH07 was confirmed to contain the presence of Chrysotile.

The remaining samples screened all returned a negative result for the presence of asbestos and were recorded as NAD (no asbestos detected), i.e. no asbestos was encountered.

The results would suggest that asbestos contamination is not pervasive throughout the made ground tested across the site, however this does not preclude that further unforeseen asbestos contamination and fragments of ACM exist elsewhere across and below the site area. It may be prudent to carry out a programme of additional sampling and delineation to determine the extent of the impacted topsoil at the location of BH08.

It is recommended that the developer, main contractor and / or appointed groundworks subcontractor prepares an Asbestos Management Plan and Risk Assessment detailing the safety measures and controls to be implemented during the construction phase.

The appointed groundworks contractor should make an allowance for asbestos awareness training and reference should be made to the 2016 CL:AIRE guidance 'Control of Asbestos Regulations 2012; Interpretation for managing and working with asbestos in soil and construction and demolition'.

Precautions should include suitable PPE (typically dust masks, disposable overalls, etc.), and the dampening down of exposed made ground deposits (if necessary) during any excavations to prevent wind-blown particles / fibres from becoming airbourne, especially during dry weather periods. It may be necessary for air monitoring to be undertaken during active excavation works to monitor for the release of any potential airbourne fibres.

8.2.4 Human Health Risk Assessment – Summary

The following is a summary of the Human Health risk assessment based on a *Residential* end use.

- **Generic Contamination:** Elevated Arsenic & Lead recorded at the locations of SAT01 and SAT02
- **Organic Contamination:** None
- **Asbestos Contamination:** Isolated fibres of Chrysotile recorded at the location of BH08, in addition to potential fragments of ACM

Based on the Human Health risk assessment completed above, localised elevated metals and the presence of asbestos has been identified within made ground deposits, and within the topsoil recorded at the location of BH08, which could pose a potential risk to human health based on a residential end use. However, the elevated Arsenic recorded at the location of SAT02 is positioned within the footprint of the new proposed agricultural barns, and therefore if this value is compared to the commercial assessment criteria value of 640mg/kg, Arsenic at this location would not pose a significant risk to human health. Furthermore, this will be present below the footprint of the agricultural barn / farmyard.

When considering the elevated Lead recorded within the made ground at the location of SAT01, remediation will be required to negate the risks to future end users. When considering the contaminants identified, a clean cover barrier system should be considered in areas of gardens and soft landscaping positioned in this locality of the site, or alternatively, when considering the thickness of the made ground (0.20m) at this location it may be practical to carry out a programme of delineation, followed by the removal of the impact materials to negate the requirement for a clean cover barrier system.

In addition, it may be prudent to carry out a programme of additional sampling and delineation to determine the extent of the asbestos impacted topsoil at the location of BH08.

A Remediation Strategy will need to be compiled and submitted to the local authority detailing the remediation and validation works required to negate the ground contamination risks identified.

The topsoil deposits recorded at the locations of HP01 and HP02 are not considered to pose a risk to human health and are suitable for re-use / remain in areas of private gardens for the proposed farmhouse. The topsoil materials present are considered suitable for re-use in a residential context in accordance with BS3882: Specification for Topsoil, 2015.

8.2.5 Water Pipe Selection Risk Assessment (UKWIR)

Samples were recovered at depths of between 0.00m up to 1.30m bgl along the proposed route of a new water supply pipe, and these were scheduled for UKWIR chemical laboratory screening. The results have been used to populate Table 1 of the water pipe risk assessment, a copy of which can be seen in Appendix III.

The results of the UKWIR screening typically indicate low contaminant concentrations which fall below the threshold values adopted for PE water pipe. Therefore, standard PE pipes are considered suitable for the site, covered by this investigation.

A watching brief is recommended during the installation of the water pipes. Consideration must be made for variations to occur in the ground conditions between the exploratory hole locations. If suspicious materials are encountered that differ from those inferred (i.e. visual/olfactory evidence of contamination), then works should be halted whilst a reassessment is undertaken.

Any backfill materials brought to site to line/backfill the excavations should be "clean" and free from contamination.

8.3 Hazardous Ground Gas Risk Assessment

As indicated in section 5.3, gas and groundwater monitoring wells have been installed in the boreholes (BHs 01, 02, 04, 06 & 07) and monitoring has been completed between the period of September and December 2025. A summary of the gas monitoring results obtained can be seen within the Ground Gas Monitoring Record Sheets Included in Appendix II.

During the monitoring completed, atmospheric air pressures have varied between 982mb and 1020mb, with raising and falling pressure trends.

No detectable concentrations of Methane have been recorded during the monitoring period. Carbon Dioxide (CO_2) concentrations have been recorded up to a maximum of 7.0%v/v, along with significantly depleted levels of Oxygen (O_2), comprising a minimum concentration of 0.0%. Significantly high positive and negative flow rates have been recorded; however, these flow rates typically occur when the gas valve is opened, with flow rates significantly reducing after a short period of time on some occasions. It is possible that the initial high flow rates are attributable to fluctuating / increasing groundwater levels between visits which pressurises the column of air / gases in the solid section of the monitoring well (piston effect).

For the purposes of assessing the proposed development in accordance with Tables 8.5 and 8.7 in CIRIA C665, and Table 2 in BS8485:2015 + A1:2019, the site is characterised based on the limiting borehole gas flow rate (*Qhg*) for Methane and Carbon Dioxide, known as the Gas Screening Value (GSV). The GSV equates to a Characteristic Situation classification which in turn determines the level of gas protection measures required in a building, in accordance with Table 4 in the BS8485 guidance.

The GSV calculation is as follows:

- CO_2 GSV = (Max CO_2 (%) / 100) x Max Flow (l/hr); (7.0 / 100) x 43.5 = 3.05l/hr
- No GSV can be calculated for Methane, as no detectable concentrations have been recorded

Based on the results, the calculated GSV for Carbon Dioxide falls below the maximum Characteristic Situation 3 (CS3) assessment value of 3.5l/hr. Therefore, the site should be classified Characteristic Situation 3 (CS3), and as such it will be necessary for gas protection measures to be incorporated within the construction of the proposed residential farmhouse proposed on this site.

Appropriate gas protection measures will need to be selected based on the characteristic situation given for the site (currently CS3) and the proposed end use / building type using the guidance contained in Section 7 of the BS8485 guidance document (Tables 3 & 4).

The design team should understand the different elements of the gas protection measures required and the influences of the building design, in particular the ground floor proposals, which will dictate the gas protection measures to be implemented in order to achieve the correct points score. The design of the gas protection measures will need to be selected based on the gas protection scores given in Tables 5, 6 & 7 which will assist in the design and ensuring that the remediation measures required are met. The design measures should be clearly shown on pre-construction design drawings (cross sections showing the adopted elements), along with any chosen gas barrier membrane products. This information will need to be compiled in a Ground Gas Verification Plan for approval by the local authority and any building warranty providers.

During the construction process / implementation of the gas protection measures, these will need to be visually verified and subject to integrity testing (if necessary) in general accordance with the CIRIA guidance C735; Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. The verification of the implemented gas protection measures will need to be included within a Validation Report, again for submission to the local authority and building warranty providers.

In addition, depleted oxygen levels have been noted. Whilst these levels are unlikely to pose a risk to above ground structures (residential properties with no basements), this could potentially pose a risk to the construction workforce for any ground works carried out below ground (i.e. installing utilities etc.). As a result of this the information presented in this report, this should be passed to the main contractor as a Workforce Health and Safety risk assessment lies out-with the scope of this report.

According to the information presented in the DTS, the site is not at risk from Radon and therefore does not require the implementation of Radon protection measures.

9.0 Construction Related Excavations and Off-Site Disposal

During the construction works it is likely that materials will be excavated (i.e. future foundations and buried utilities, etc.) which cannot be accommodated on site, due to space and level constraints, and will need to be discarded of and removed from site as a waste.

During the construction works, different materials should be stockpiled separately (i.e. made ground, topsoil, natural strata, etc.), and an appropriate waste disposal classification should be determined by the Design Team prior to removal, in accordance with Environment Agency's technical guidance; WM3: Waste Classification – Guidance on the classification and assessment of waste (1st edition, v.1.2.GB, October 2021). Following preliminary assessment to determine the waste classification (i.e. Non-Hazardous or Hazardous), it may be the case that additional WAC testing is required to determine the choice of landfill for the disposal of the waste soils.

Where any materials are being removed from site they should be disposed of at a suitably licensed and appropriate landfill based on their classification, with a duty of care system in place and maintained throughout the disposal operation.

When considering the sampling and testing carried out to date on the topsoil and made ground present across the site, and based on the physical (visual and olfactory) appearance of the materials, we would assess these materials from the WM3 List of Waste (LoW) codes as 17 05 04 (soil and stones other than those mentioned in 17 05 03), and are likely to be classified as Non-Hazardous waste. In order to confirm the correct waste code assigned to these materials they should be accurately assessed using either the HazWasteOnline™ software assessment tool or by the receiving waste management / landfill operator.

If these materials were taken off-site as Non-Hazardous waste, then no further assessment or testing would be required. However, based on the TOC values and the low levels of PAHs and Petroleum Hydrocarbons, it is possible that some of these materials could be disposed of at an Inert waste landfill. In order for these materials to be accepted at an Inert waste landfill, confirmatory testing in the form Waste Acceptance Criteria (WAC) testing would be required prior to disposal to confirm their suitability for disposal.

In accordance with the WM3 guidance, it is likely that natural strata (providing it is uncontaminated) can be disposed of at an Inert waste landfill, although this will be subject to the completion of appropriate chemical screening and WAC testing to confirm this. The number of samples required for screening will be dependent on the overall volume of material requiring disposal.

Any material movements may potentially require a Material Management Plan (MMP) in accordance with CL:AIRE. This should be in place before commencing development works as an MMP cannot be applied for retrospectively.

10.0 Discussion and Recommendations

10.1 Ground and Groundwater Conditions Summary

The ground investigation has recorded the presence of topsoil ranging between 0.20m up to at least 0.45m thick, and made ground comprising dark brown soil, gravelly sand, sandy gravel and pebbles, and occasional limestone, brick, concrete and slate was recorded ranging typically between 0.20m up to 0.70m. The made ground was locally deeper at the location of SAT02 (up to 0.90m), comprising dark brown sandy gravelly soil with occasional fragments of brick, sandstone, metal and timber.

Below the initial layers of topsoil and made ground, superficial deposits were noted to be extremely variable in composition and also in strength / density, comprising very loose through to dense sand and gravel, and very soft through to stiff clay deposits, proven to depths of at least 5.0m bgl. The solid geology (bedrock) has not been encountered as part of these works.

The natural sand deposits were noted to be wet between the depths of 1.00m and 3.00m, and ingresses of groundwater / groundwater strikes were recorded within the natural deposits ranging between the depths of 0.60m and 3.00m. The water level was noted to marginally rise to 1.50m within BH08. It is likely that the 'wet' sand deposits will create 'running sand' conditions to occur where excavations are left open for a long period of time.

During the groundwater monitoring, standing water levels have been recorded ranging between ground level and 4.85m bgl.

As such significant groundwater ingresses should be anticipated, and it is recommended that an allowance is made for groundwater control measures (i.e. sump pumping equipment) when excavations extend down to and beyond the depths of where groundwater has been observed, and particularly during wetter periods of the year, to ensure excavations remain dry prior to constructing foundations and the like.

During the investigation, generally GEO did not identify any visual or olfactory evidence of fuel/oil type contamination (no staining, odour or free product) or any landfill type waste, with no potentially biodegradable, decomposable or putrescible materials. The only exception was the presence of an odour of solvent / creosote and / or hydrocarbons noted between the depths of 0.60m to 0.90m at the location of SAT02. Samples recovered were appropriately screened to determine the risks.

The results of the soakaway tests identified negligible discharges of water and as such the ground conditions are not considered suitable for the direct discharge of surface water to the ground. As such alternative methods for the discharge of surface water will need to be considered, such as discharge into a surface water course (if possible) or into the existing public sewer infrastructure likely present adjacent to the site. It is likely that some form of attenuation and restricted discharge flow rate will need to be accommodated to allow discharge into the sewer infrastructure.

10.2 Future Foundations, Pavements and Buried Structures

It is understood that the proposed development will comprise the construction of a new farmhouse and 2 no. agricultural barns. The findings of the ground investigation works have encountered variable deposits across the site area comprising very soft through to stiff clays and very loose through to dense sand deposits. In addition, the sand deposits are noted to be 'wet' on most occasions, with water seepages and ingresses recorded between depths of 0.60m and 4.00m bgl. Any construction related excavations undertaken will encounter water ingresses and 'running sand' conditions, and likely trench wall instability at shallow depths. As such appropriate precautions will need to be adopted (lateral trench support) to prevent collapse and over excavation below depths of 0.60m bgl.

With regards to new foundations for the proposed farmhouse, variable differential settlements will occur where foundations straddle between clay and 'wet' sand deposits, with variable strength and density characteristics noted throughout the ground profile.

Furthermore, shallow water is present, in particular BH01 at 0.60m, which will have the effect of reducing the overall bearing capacity of the sand deposits at shallow depth. It is possible that a rafted foundation could be utilised for the new farmhouse, based on a minimum of 300mm sub-base constructed from current ground levels, and designed to a limited / maximum allowable bearing pressure of 15kN/m^2.

For the new agricultural barns, again variable conditions exist across the proposed footprints, along with the presence of shallow water from depths of 1.00m. Since the agricultural barns are considered less sensitive with regards to differential settlements, it is possible that pad foundations could be considered, however these would need to be maintained at shallow depths above the 'wet' sand deposits / groundwater, and designed to a maximum allowable bearing pressure of 40kN/m^2.

Alternatively, if the allowable bearing pressures provided are not sufficient for the proposed development, then consideration would need to be given to the use of either ground improvement or piles. It will be necessary for the ground improvement to take into account the presence of shallow water (liquefaction), and some dewatering may be required for this technique to be employed. If piling is considered, it may be necessary for deeper boreholes to be sunk to identify a suitable founding strata in order to assist the piling contractors with their designs.

As standard, it would be prudent to make an allowance for all foundation excavations to be inspected by a suitably qualified Engineer during the construction process to verify the correct founding strata and depths have been achieved, and to ensure that there are no significant changes or variations in the ground conditions identified as part of these investigation works.

With respect to buried structures (concrete), the pH levels and soluble sulphate concentrations in the soils equate to a Design Sulphate classification of DS-1 and an ACEC classification of AC-2z (BRE Special Digest 1: 2005).

10.3 Ground Contamination

Based on the Human Health risk assessment completed, localised elevated metals and the presence of asbestos has been identified within made ground deposits, and within the topsoil recorded at the location of BH08, which could pose a potential risk to human health based on a residential end use. However, the elevated Arsenic recorded at the location of SAT02 is positioned within the footprint of the new proposed agricultural barns, and therefore if this value is compared to the commercial assessment criteria value of 640mg/kg, Arsenic at this location would not pose a significant risk to human health. Furthermore, this will be present below the footprint of the agricultural barns / farmyard.

When considering the elevated Lead recorded within the made ground at the location of SAT01, remediation will be required to negate the risks to future end users. When considering the contaminants identified, a clean cover barrier system should be considered in areas of gardens and soft landscaping positioned in this locality of the site, or alternatively, when considering the thickness of the made ground (0.20m) at this location it may be practical to carry out a programme of delineation, followed by the removal of the impact materials to negate the requirement for a clean cover barrier system.

In addition, it may be prudent to carry out a programme of additional sampling and delineation to determine the extent of the asbestos impacted topsoil at the location of BH08.

A Remediation Strategy will need to be compiled and submitted to the local authority detailing the remediation and validation works required to negate the ground contamination risks identified.

The topsoil deposits recorded at the locations of HP01 and HP02 are not considered to pose a risk to human health and are suitable for re-use / remain in areas of private gardens for the proposed farmhouse, and are considered suitable for re-use in accordance with BS3882: Specification for Topsoil, 2015,

Given the results of the chemical screening (UKWIR), standard water supply pipes (PE) are considered suitable.

Any imported materials required on site should be screened prior to placement on site to ensure contaminated materials are not being brought to site and that they are suitable for use within a Residential setting.

10.4 Ground Gas

The results of the ground gas monitoring indicate the presence of no Methane, however, elevated concentrations of Carbon Dioxide (>5%). High positive flow rates have been noted; however, this is suspected to be attributable to the presence of significant surface water ingresses filling up the monitoring wells (piston effect). Nonetheless, the calculated GSV for the site has determined that the site should be placed within a CS3 classification, and therefore gas protection measures are considered necessary. The site will therefore require a Ground Gas Verification Plan, detailing the proposed remediation measures and validation requirements.

The site lies within a low-risk Radon area and does not require Radon protection measures to be implemented within the construction of new buildings.

10.5 Post Investigation Works

Redundant boreholes should be made safe and secure and should not cause a preferential pathway for contaminants and ground gasses.

However, based on the ground gas levels recorded on the site, and the ground conditions encountered, the wells that have been installed as part of this investigation could pose a potential risk to the proposed development, and therefore these should be appropriately decommissioned.

Where decommissioning is required, the works should be completed in accordance Environment Agency Guidelines: “Guidance on the design and installation of groundwater Monitoring points”, Section 5.5 Decommissioning (Page 59), and “Decommissioning abandoned boreholes and wells”.

10.6 General Comments

Consideration must be made for variations to occur in the ground conditions between the exploratory hole locations for which GEO holds no responsibility and areas where limited access was available. It is therefore recommended that a “watching brief” and “observational technique” be applied to this site to ensure that if ground conditions appear to vary from those identified within this investigation report then advice should be sought from a suitably qualified and experienced Engineering Geologist, Geotechnical or Geo-Environmental Engineer.

The recommendations and opinions expressed in this report are based on the strata observed within the exploratory holes, in addition to the results of the site and laboratory tests commissioned by GEO. Consequently, GEO takes no responsibility for conditions that have not been revealed or which occur between them. GEO takes no responsibility for the accuracy of third-party information provided by sub-contract drillers or laboratories.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders including warranty providers in order to seek their approval of the findings prior to undertaking any works on site.

End of Report

Appendix I

- Site Location Plan
- Site Plan Existing (Pre-Demolition)
- Site Plan Proposed

GEO Environmental Engineering

GEO2025-6701 -: NEWHOUSE FARM, DRIGG, HOLMROOK, CUMBRIA – Site Location Plan

Website: www.geoenvironmentalengineering.com
Email: info@geoenvironmentalengineering.com
Telephone: 07883 440 186

Note:

Prior Approval for Demolition has already been approved under Application No: 4/24/2008/0F1

1 Site Plan Existing

1 : 500

AVISON YOUNG

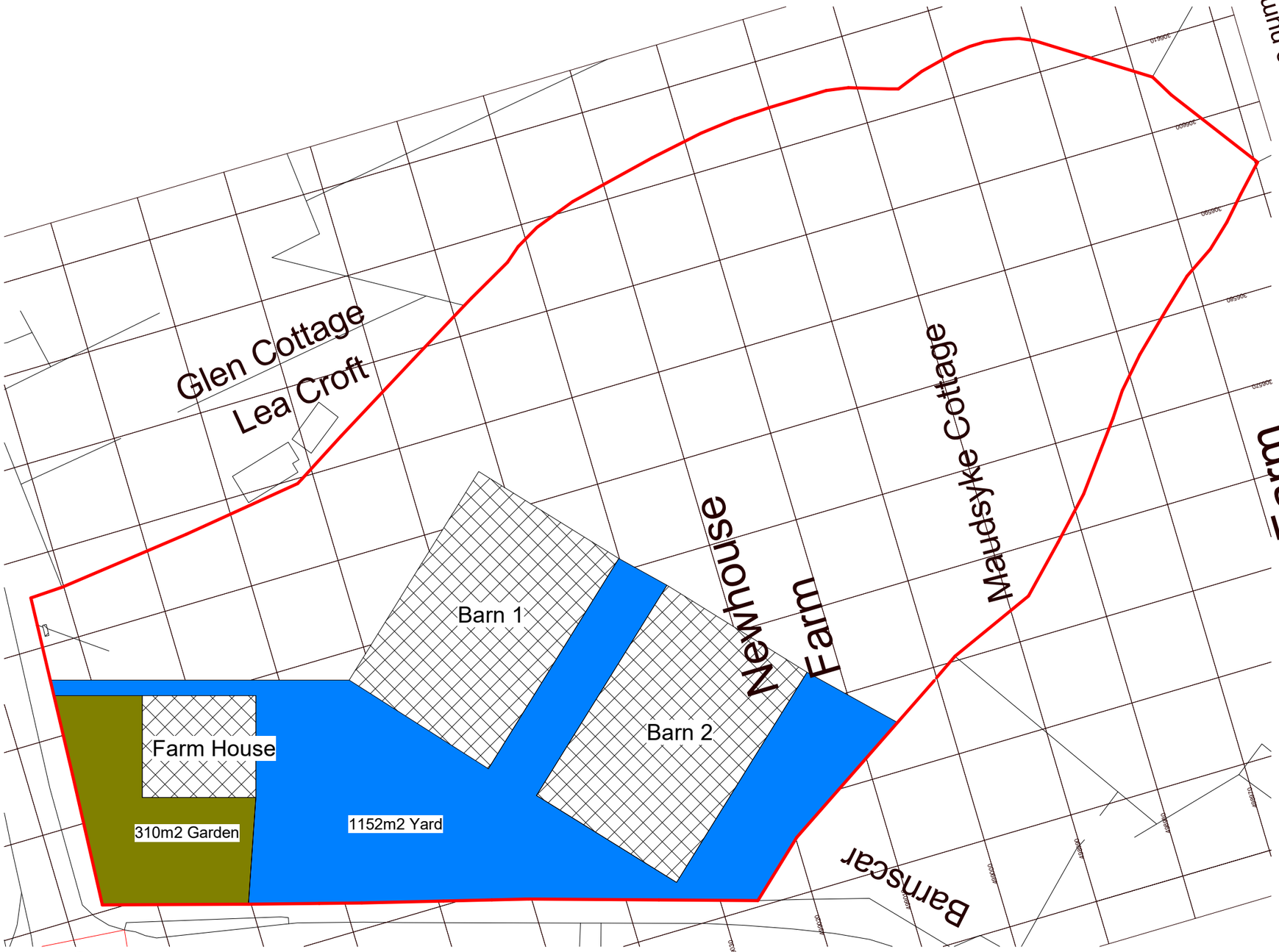
No.	Description	Date
A	North Point Added	22/05/24

PROJECT
New House Farm Drigg

SHEET
Site Plan Existing

CLIENT
NDA

Date 22/05/24	Project number 144-15-1	Scale (@ A3) 1 : 500	
Drawn by SWB	DRAWING NUMBER P02		REV A
Sheet Size A3			



1 **Site Plan Landscaping**
1 : 500

Note:

Prior Approval for the Demolition of the existing buildings has already been approved under Application No: 4/24/2008/0F1.

Full Planning permission would be submitted with a full design once completed but in support of this outline planning permission submission; the new buildings would consist of the following;

The Barns

2No traditionally built single storey modern Steel Portal Frame Barns; Each barn being, Length approximately 27.43m; Width 18.29m to a maximum height of 5m covering an area of 501.68m2; the structure clad to the metal portal frame will comprise of metal/timber structural members taking the roof and wall loadings with the portal frame support on pad foundations. the floor bases will be reinforced concrete; the walls would be Yorkshire boarding/metal cladding with a skirt of blockwork or concrete between 1m and 2m in height. The roof covering would be insulated metal roofing panels incorporating clear roof lights. There would be a maximum of 2 full sized double gates/doors either end of the barns to accommodate farm machinery/tractors with their loads.

The House

The house would be of a similar construct and a similar size to the existing but to modern building regulation standards of the existing property being two storeys, with a floor area not exceeding 110m2 and would comprise of a concrete foundations to suite ground conditions, concrete ground floor with timber first floor, the walls would be cavity construction blockwork/rendered and painted walls; the doors and windows would be PVCu double glazed. The roof would be traditional purlin/rafter arrangements or timber truss with a roof covering of slate or tiles. The rainwater goods would be PVCu connecting to a new modern septic tank/water treatment unit, which would replace the existing out of date system.

North

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AVISON YOUNG

No.	Description	Date
A	North Point Added	22/05/24
B	Landscaping Added	05/07/24

PROJECT
New House Farm Drigg

SHEET
Site Plan Proposed

CLIENT
NDA

Date 11/06/24	Project number 144-15-1	Scale (@ A3) 1 : 500	
Drawn by SWB	DRAWING NUMBER P03		REV B
Sheet Size A3			

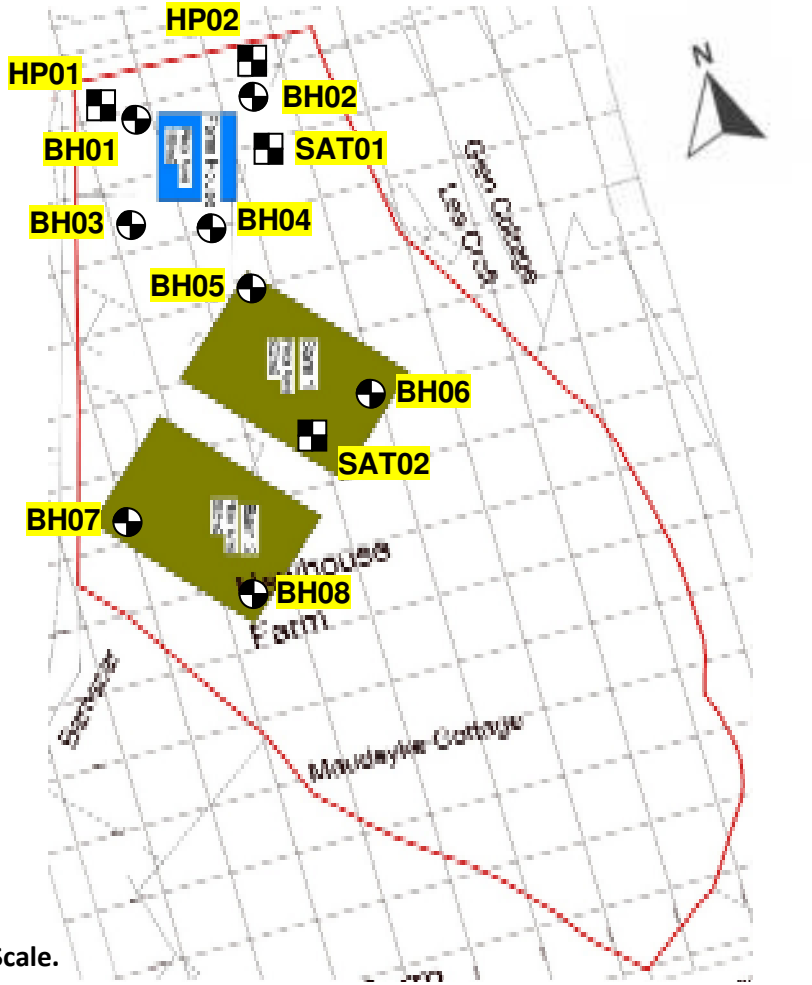
Appendix II

- Site Investigation Location Plan
- Exploratory Hole Logs (Trial Pits & Boreholes)
- Ground Gas Monitoring Sheets

GEO Environmental Engineering

GEO2025-6701: Newhouse Farm, Station Road, Drigg, Cumbria

Site Investigation Location Plan



*** Exploratory Hole Locations are approximate. Do Not Scale.**

Website: www.geoenvironmentalengineering.com
Email: info@geoenvironmentalengineering.com
Telephone: 07883 440 186

Hand Pit

HP01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
HP				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.00-0.40	ES			(0.40)		Grass overlying dark brown silty sandy SOIL with occasional cobbles [TOPSOIL]
						0.40		
						(0.10)		Light orange-brown silty fine to coarse SAND [DEVENSIAN TILL]
						0.50		*End of Trial Pit at 0.50m*

0.5
1.0
1.5
2.0
2.5
3.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 0.50m HP Manually Excavated
Stable
L = 0.30m
W = 0.30m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Hand Pit

HP01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
HP				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 0.50m HP Manually Excavated
Stable

L = 0.30m

W = 0.30m

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Hand Pit

HP02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
HP				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.00-0.45	ES			(0.45)		Grass overlying dark brown silty sandy SOIL with occasional cobbles [TOPSOIL]
						0.45		*End of Trial Pit at 0.45m*

0.5
1.0
1.5
2.0
2.5
3.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 0.45m HP Manually Excavated
Stable
L = 0.30m
W = 0.30m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Hand Pit

HP02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
HP				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 0.45m HP Manually Excavated
Stable

L = 0.30m

W = 0.30m

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Soakaway Test

SAT01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
SOAK				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.00-0.30	ES			(0.20) 0.20		Dark brown soil with occasional brick [MADE GROUND]
						(0.30) 0.50		Light brown silty fine to coarse SAND [DEVENSIAN TILL]
						(1.60) 2.10		Stiff reddish-brown and grey slightly sandy CLAY [DEVENSIAN TILL]
								End of Borehole at 2.10m

0.5
1.0
1.5
2.0
2.5
3.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 2.10m SOAK 5Tonne Tracked Excavator
Stable
L = 1.60m
W = 0.80m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Soakaway Test

SAT01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
SOAK				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 2.10m SOAK 5Tonne Tracked Excavator
Stable

L = 1.60m

W = 0.80m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Soakaway Test

SAT02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
SOAK				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.00-0.60	ES			(0.90)		Dark brown sandy gravelly soil with occasional fragments of brick, sandstone, metal and timber [MADE GROUND]
		0.60-0.90	ES					*** Odour of creosote / hydrocarbons ** (0.60 - 0.90m)*
	▽					0.90 (1.40)		Light brown silty fine to coarse SAND [DEVENSIAN TILL]
						2.30		*End of Borehole at 2.30m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 2.30m SOAK 5Tonne Tracked Excavator
Side walls collapsing between 1.15m and 1.90m
L = 1.60m
W = 0.80m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Created using Pebble Geo

Soakaway Test

SAT02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
SOAK				1:15

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-28	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.60			8/28/25	Seepage of water & 'running sand'

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.60			Seepage from sand deposits

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 2.30m SOAK 5Tonne Tracked Excavator
Side walls collapsing between 1.15m and 1.90m

L = 1.60m

W = 0.80m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample
AMAL - Amalgamated sample
B - Bulk disturbed sample
BLK - Block sample
C - Core sample
CBR - CBR test sample
D - Disturbed sample
ES - Environmental sample
EW - Environmental water sample
G - Gas sample
J - Jar sample
L - Liner sample
TW - Pushed thin wall sample
U - Undisturbed sample
UT - Undisturbed thin wall sample
W - Water sample

IN-SITU TESTS

HV - Hand shear vane
HV(r) - Hand shear vane residual
PID - Photo ionisation detector
PP - Hand penetrometer
SPT - Standard penetration test
SPT(C) - SPT using cone

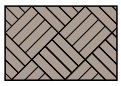
GROUNDWATER

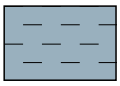
Groundwater strike
Groundwater rest level

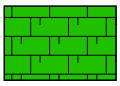
ROTARY CORE DETAILS

TCR - Total core recovery (%)
SCR - Solid core recovery (%)
RQD - Rock quality designation (%)
FI - Fracture index
NI - Non-intact core
AZCL - Assumed zone of core loss

LEGEND


Topsoil


Clay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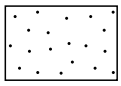
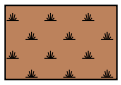
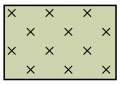
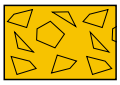
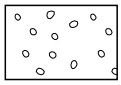
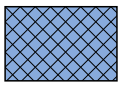

Sand backfill

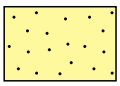

Peat


Silt


Breccia


Gravel backfill


Made ground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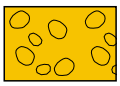
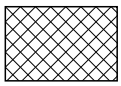
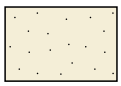
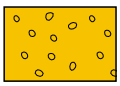
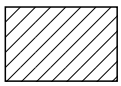

Conglomerate

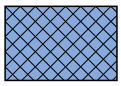

Arisings

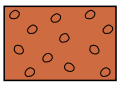

Concrete

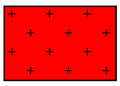

Gravel

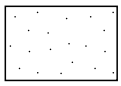

Metamorphic

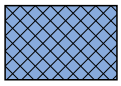

Bentonite

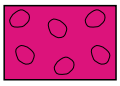

Wood


Cobbles


Igneous

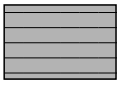

Concrete


Brick


Boulders

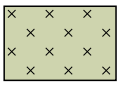

Grout


Bituminous material

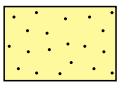

Mudstone


Plain pipe

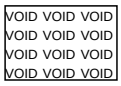

Gypsum


Siltstone

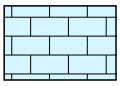

Coal


Sandstone


Slotted pipe



Void


Limestone

Created using Pebble Geo

Borehole Log

BH01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.05) 0.05		Grey and red coarse semi-rounded gravel [MADE GROUND]
								Very loose light reddish-brown silty fine to coarse SAND [DEVENSIAN TILL]
	▼	0.60-1.00	GS					
		0.60-1.00	DS					*Noted to be 'wet' from 0.60m (0.60m)*
						(1.35)		
		1.00	SPT	N=3 (0,0/1,0,1,1)				
						1.40		Very soft (very low strength) reddish-brown very sandy CLAY [DEVENSIAN TILL]
		1.55	HV	16 (kPa)		(0.45)		
		1.90	HV	36 (kPa)		1.85		Initially soft (low strength) becoming firm (medium strength) & stiff (high strength) sandy slightly gravelly CLAY [DEVENSIAN TILL]
		1.90	GS					
		2.00	SPT	N=12 (2,1/3,2,3,4)				
		2.25	HV	57 (kPa)				
		2.55	HV	80 (kPa)				
		2.90	HV	64 (kPa)				
		3.00	SPT	N=20 (4,5/5,5,5,5)				
		3.25	HV	76 (kPa)				
		3.50	HV	82 (kPa)		(3.15)		
		3.90	HV	74 (kPa)				
		4.20	HV	80 (kPa)				
		4.50	HV	82 (kPa)				
		4.90	HV	80 (kPa)		5.00		*End of Borehole at 5.00m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
2.00	115	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
0.60	2.00		8/26/25	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
0.60	0.60		

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=3 (0,0/1,0,1,1)
2.00 (S)	2.00				N=12 (2,1/3,2,3,4)
3.00 (S)	2.00				N=20 (4,5/5,5,5,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	GS		
	GS		
	DS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH02
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.05-0.45	GS			(0.05) 0.05		Light brown silty fine to coarse SAND [DEVENSIAN TILL]
						(0.40)		Light brown / light reddish-brown silty sandy slightly gravelly 'dry'/friable CLAY [DEVENSIAN TILL]
		0.45-0.75	GS			0.45		
						(0.30)		Stiff orange-brown, black and reddish-brown silty sandy slightly gravelly 'friable' CLAY [DEVENSIAN TILL]
		0.85	HV	18 (kPa)		0.75 (0.15)		Very soft (very low strength) reddish-brown sandy CLAY [DEVENSIAN TILL]
	▽	1.00	SPT	N=7 (2,1/2,1,2,2)		0.90 (0.20)		Brown, occasionally grey, silty fine to coarse SAND [DEVENSIAN TILL]
		1.10-1.30	GS			1.10		Firm (medium strength) becoming soft (low strength) brown sandy CLAY [DEVENSIAN TILL]
		1.25	HV	44 (kPa)				*Partially decayed plant roots to 1.20m (1.10 - 1.20m)*
		1.47	HV	32 (kPa)		(0.71)		
		1.77	HV	29 (kPa)		1.81		Brown very clayey very gravelly SAND [DEVENSIAN TILL]
		2.00	SPT	N=9 (2,1/2,2,2,3)		(0.29) 2.10		Soft (low strength) becoming firm (medium strength) brown sandy CLAY with sand lenses [DEVENSIAN TILL]
		2.20	HV	23 (kPa)				
		2.45	HV	40 (kPa)		(0.80)		
		2.65	HV	64 (kPa)				
		2.80	HV	78 (kPa)		2.90		Medium dense brown gravelly SAND with pebbles [DEVENSIAN TILL]
		3.00	SPT	N=26 (5,7/7,6,6,7)				
						(2.10)		
						5.00		*End of Borehole at 5.00m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
2.00	115	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.00			Sand deposits noted to be 'wet' from 1.00m

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=7 (2,1/2,1,2,2)
2.00 (S)	2.00				N=9 (2,1/2,2,2,3)
3.00 (S)	2.00				N=26 (5,7/7,6,6,7)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	GS		
	GS		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.25	ES			(0.25)		Dark brown & yellow-brown slightly silty slightly gravelly sand [MADE GROUND]
		0.25-1.00	GS			0.25		Medium brown clayey silty fine to coarse SAND [DEVENSIAN TILL]
						(0.75)		
	▽	1.00	SPT	N=4 (1,1/1,1,1,1)		1.00		Very soft (very low strength) becoming soft (low strength) dark brown very sandy CLAY [DEVENSIAN TILL]
		1.00-1.50	GS					
		1.20	HV	15 (kPa)				
		1.40	HV	15 (kPa)				
		1.50-2.00	GS					
		1.60	HV	38 (kPa)				
		1.70	HV	40 (kPa)		(1.50)		
		2.00	SPT	N=10 (2,2/2,2,3,3)				
		2.15	HV	33 (kPa)				
		2.40	HV	40 (kPa)				
						2.50		Firm (medium strength) and stiff (high strength) dark brown sandy CLAY [DEVENSIAN TILL]
		2.70	HV	88 (kPa)				
		3.00	HV	84 (kPa)				
		3.15	HV	70 (kPa)		(1.50)		
		3.55	HV	78 (kPa)				
	▽	4.00	HV	116 (kPa)		4.00		Dark brown silty fine to coarse SAND [DEVENSIAN TILL]
						(0.35)		
		4.45	HV	78 (kPa)		4.35		Stiff (high strength) dark brown, initially sandy, CLAY [DEVENSIAN TILL]
						(0.65)		
		4.75	HV	80 (kPa)				
						5.00		*End of Borehole at 5.00m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH03

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
4.00		2.00	8/26/25	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.00			Sand deposits noted to be 'wet' from 1.00m
4.00			

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=4 (1,1/1,1,1,1)
2.00 (S)	1.00				N=10 (2,2/2,2,3,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	GS		
	GS		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 5.00m BH Dando Terrier Rig
Stable

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	ES			(0.40)		Light brown silty pebbly sand [MADE GROUND]
		0.50	DS			0.40 (0.10) 0.50		Black sandy pebbles [MADE GROUND]
						(0.55)		Light brown silty slightly pebbly fine to coarse SAND [DEVENSIAN TILL]
		1.00	SPT	N=7 (2,1/2,2,1,2)		1.05		
		1.10-1.30	GS					Firm (medium strength) and stiff (high strength), occasionaly soft (low strength), slightly sandy gravelly CLAY [DEVENSIAN TILL]
		1.25	HV	82 (kPa)				
		1.45	HV	53 (kPa)				
		1.65	HV	36 (kPa)				
		1.85	HV	52 (kPa)		(1.55)		
		2.00	HV	80 (kPa)				
		2.35	HV	98 (kPa)				
						2.60		Dense brown very sandy GRAVEL becoming gravelly SAND [DEVENSIAN TILL]
		3.00	SPT(C)	N=34 (8,8/8,8,9,9)				
						(1.75)		
		4.00	SPT(C)	N=35 (8,9/9,9,8,9)				
						4.35		*End of Borehole at 4.35m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 4.35m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH04

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=7 (2,1/2,2,1,2)
3.00 (C)	1.00				N=34 (8,8/8,8,9,9)
4.00 (C)	1.00				N=35 (8,9/9,9,8,9)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	DS		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 4.35m BH Dando Terrier Rig
Stable

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.15-0.70	ES			(0.15) 0.15		Light brown silty pebbly sand [MADE GROUND]
						(0.55) 0.70		Dark brown and black slightly gravelly sand [MADE GROUND]
		0.80-1.00	DS					Loose light brown slightly clayey / silty fine to medium 'wet' SAND [DEVENSIAN TILL]
		0.80-1.00	GS					
	▽	1.00	SPT	N=8 (2,2/3,2,2,1)		(1.25) 1.95		
		2.00	SPT	N=9 (1,1/2,2,2,3)		(0.35) 2.30		Very soft brown very sandy CLAY [DEVENSIAN TILL]
		2.40	HV	28 (kPa)		(0.70) 3.00		Soft (low strength) becoming firm (medium strength) brown sandy CLAY [DEVENSIAN TILL]
		2.55	HV	44 (kPa)				
	▽	2.85	HV	72 (kPa)		(0.15) 3.15		Brown silty fine to coarse 'wet' SAND [DEVENSIAN TILL]
		3.50	SPT	N=50 for 225mm (10,10/15,13,22)		(0.25) 3.40		Firm brown sandy CLAY [DEVENSIAN TILL]
						(0.13) 3.53		Brown very gravelly coarse SAND [DEVENSIAN TILL]
						(0.15) 3.68		Firm brown sandy CLAY [DEVENSIAN TILL]
						(0.15) 3.83		Red slightly silty fine SAND [DEVENSIAN TILL]
						(0.05) 3.88		Grey sandstone COBBLE [DEVENSIAN TILL]
								End of Borehole at 3.88m

Remarks
Terminated due to cobble obstruction

Method, Plant, Stability, Dimensions
0.00 - 3.88m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH05

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-26	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.00			Sand deposits noted to be 'wet' from 1.00m
3.00			Sand deposits noted to be 'wet' from 3.00m

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=8 (2,2/3,2,2,1)
2.00 (S)	1.00				N=9 (1,1/2,2,2,3)
3.50 (S)	1.00				N=50 for 225mm (10,10/15,13,22)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	DS		
	GS		

Remarks
Terminated due to cobble obstruction

Method, Plant, Stability, Dimensions
0.00 - 3.88m BH Dando Terrier Rig
Stable

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH06
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.05-0.50	ES			(0.05) 0.05		Grass overlying dark brown soil [MADE GROUND]
						(0.15) 0.20		Light brownish-grey sandy gravel [MADE GROUND]
		0.40-0.70	DS			(0.30) 0.50		Brown and red sandy gravel of brick, concrete, slate and pebbles [MADE GROUND]
						(0.20) 0.70		Dark brown, speckled rusty-brown slightly clayey silty SAND [DEVENSIAN TILL]
		0.80	GS			(0.25) 0.95		Light brown and light grey silty fine to coarse SAND [DEVENSIAN TILL]
		0.95 1.00	HV SPT	82 (kPa) N=10 (1,2/1,2,3,4)		(0.45) 1.40		Stiff (high strength) becoming firm (medium strength) reddish-brown slightly sandy CLAY with sand & gravel partings [DEVENSIAN TILL]
	▽	1.25	HV	51 (kPa)				
		2.00	SPT	N=12 (2,3/3,3,3,3)				Medium dense becoming loose brown silty fine to coarse 'wet' SAND [DEVENSIAN TILL]
	▽	3.00	SPT	N=7 (2,2/2,2,2,1)		(3.30) 4.70		
		4.78	HV	18 (kPa)		(0.30) 5.00		Initially soft (low strength) becoming firm (medium strength) sandy slightly gravelly CLAY [DEVENSIAN TILL]
		4.95	HV	47 (kPa)				*End of Borehole at 5.00m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 5.00m BH Dando Terrier Rig
Borehole collapsed at 2.10m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH06

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.40		2.00	8/26/25	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40			Sand deposits noted to be 'wet' from 1.40m
2.40			

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=10 (1,2/1,2,3,4)
2.00 (S)	1.00				N=12 (2,3/3,3,3,3)
3.00 (S)	1.00				N=7 (2,2/2,2,2,1)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	DS		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 5.00m BH Dando Terrier Rig
Borehole collapsed at 2.10m

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.30	ES			(0.30)		Dark brown sandy slightly gravelly soil [MADE GROUND]
						0.30		
						(0.20)		Medium brown sandy grit with occasional limestone gravel and slate at base [MADE GROUND]
						0.50		
		0.65	HV	59 (kPa)				Firm (medium strength) becoming soft (low strength) reddish-brown sandy slightly gravelly CLAY [DEVENSIAN TILL]
		0.90	HV	54 (kPa)				
		0.90	GS					
	▽	1.00	SPT	N=7 (1,1/2,1,2,2)				
		1.25	HV	33 (kPa)		(1.45)		
		1.60	HV	40 (kPa)				
		1.90	HV	30 (kPa)				
		2.00	SPT	N=7 (1,1/2,1,2,2)		1.95		
						(0.25)		Reddish-brown very clayey SAND [DEVENSIAN TILL]
						2.20		
		2.30	HV	31 (kPa)				Initially soft (low strength) becoming firm (medium strength) brown sandy CLAY [DEVENSIAN TILL]
		2.50	HV	44 (kPa)				
						(0.80)		
	▽	3.00	SPT	N=9 (1,2/2,2,2,3)		3.00		
						(0.25)		Reddish-brown very clayey SAND [DEVENSIAN TILL]
						3.25		
		3.40	HV	40 (kPa)				Firm (medium strength) brown sandy CLAY [DEVENSIAN TILL]
						(0.75)		
		3.70	HV	49 (kPa)				
						4.00		*End of Borehole at 4.00m*

Remarks

Method, Plant, Stability, Dimensions
0.00 - 4.00m BH Dando Terrier Rig
Borehole collapsed at 3.20m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

Borehole Log

BH07

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.15			Sand deposits noted to be 'wet' from 1.15m
3.00			Sand deposits noted to be 'wet' from 3.00m

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=7 (1,1/2,1,2,2)
2.00 (S)	1.00				N=7 (1,1/2,1,2,2)
3.00 (S)	1.00				N=9 (1,2/2,2,2,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 4.00m BH Dando Terrier Rig
Borehole collapsed at 3.20m

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH08
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client
RH Irving Construction Ltd

Consultant
Richard Stripp

Contractor
Geo Environmental Engineering Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.20	ES			(0.20) 0.20		Grass overlying dark brown sandy SOIL [TOPSOIL]
		0.20-0.80	DS			(0.60) 0.80		Dark brown, occasionally rusty-brown, silty slightly gravelly SAND [DEVENSIAN TILL]
		0.80-1.00	GS			(0.75) 1.55		Stiff (high strength) medium brown slightly silty slightly sandy slightly gravelly CLAY [DEVENSIAN TILL]
		0.90	HV	84 (kPa)				
		1.00	SPT	N=13 (2,4/3,3,3,4)				
		1.15	HV	102 (kPa)				
	▼	1.40	HV	110 (kPa)				
		2.00	SPT	N=5 (0,0/0,1,2,2)		(0.98) 2.53		Loose brown silty fine to coarse 'wet' SAND [DEVENSIAN TILL]
		2.65	HV	18 (kPa)		(0.47) 3.00		Soft (low strength) becoming firm (medium strength) reddish-brown very sandy CLAY [DEVENSIAN TILL]
		2.80	HV	30 (kPa)				
		2.95	HV	45 (kPa)				
		3.00	SPT	N=12 (2,2/2,3,3,4)		(0.70) 3.70		Medium dense brown silty fine to coarse sand 'wet' SAND [DEVENSIAN TILL] *Becoming clayey from 3.40m (3.40 - 3.70m)*
		3.85	HV	54 (kPa)		(0.30) 4.00		Firm (medium strength) brown sandy CLAY [DEVENSIAN TILL]
								End of Borehole at 4.00m

Remarks

Method, Plant, Stability, Dimensions
0.00 - 4.00m BH Dando Terrier Rig
Borehole collapsed at 2.50m

Logger
R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Borehole Log

BH08

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
BH				1:25

Project Name	Project No.	Start Date	End Date
New House Farm, Station Road, Drigg, Cumbria	GEO2025-6701	2025-08-27	

Client	Consultant	Contractor
RH Irving Construction Ltd	Richard Stripp	Geo Environmental Engineering Ltd

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
1.00	115	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.50		1.00	8/27/25	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.55	1.50		Sand deposits noted to be 'wet' from 1.55m

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.00 (S)	1.00				N=13 (2,4/3,3,3,4)
2.00 (S)	1.00				N=5 (0,0/0,1,2,2)
3.00 (S)	1.00				N=12 (2,2/2,3,3,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	DS		
	GS		

Remarks

Method, Plant, Stability, Dimensions

0.00 - 4.00m BH Dando Terrier Rig
Borehole collapsed at 2.50m

Logger

R Stripp

Checked By: Richard Stripp **Approved By:** Curtis Evans **Status:** FINAL

SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Appendix III

- Laboratory Test Results
- Table 1 Water Pipe Risk Assessment

UKAS accredited testing laboratory No. 0744 Report/Sample ID No: **S2170**

Northumberland County Council

Highways Laboratory
Bassington Drive • Cramlington • Northumberland • NE23 8AJ
Tel (01670) 737575 • Email highwayslaboratory@northumberland.gov.uk

TEST REPORT

Client:	**GEO Environmental Engineering Ltd, 31 Casshow Way, Cockermouth, CA13 9**
Engineer:	**Curtis Evans / Richard Stripp**
Project:	**GEO2025-6701 - Newhouse Farm, Station Road, Drigg, Cumbria**
Supplier/Source:	**Site**
Date Sampled:	
Date Received:	**09/09/2025**
Sampled By:	**Clients Staff**
SampleSpec:	**Sampled by Site Staff/Client**
Remarks:	**None**

Signed: _____ [✓] M. Newton, Laboratory Manager
[ ] P. Fletcher. Senior Technician

ADDITIONAL INFORMATION

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
If Northumberland County Council carried out the sampling then all sampling was carried out at the named project above. All testing is carried out at Northumberland County Council Laboratory, testing is carried out to the specification stated in this report, except for subcontracted testing.
Uncertainty of measurement available on request..
Results reported herein relate only to the material supplied to the laboratory.
No decision rule will be given
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

UKAS accredited testing laboratory No. 0744

Northumberland
County Council

Highways Laboratory
Bassington Drive • Cramlington • Northumberland • NE23 8AJ
Tel (01670) 737575 • Email highwayslaboratory@northumberland.gov.uk

Report/Sample ID No: **S2170/01**

Location: BH01 at 1.90
Material Type: Brown sandy CLAY with very occasional gravel

Test Results

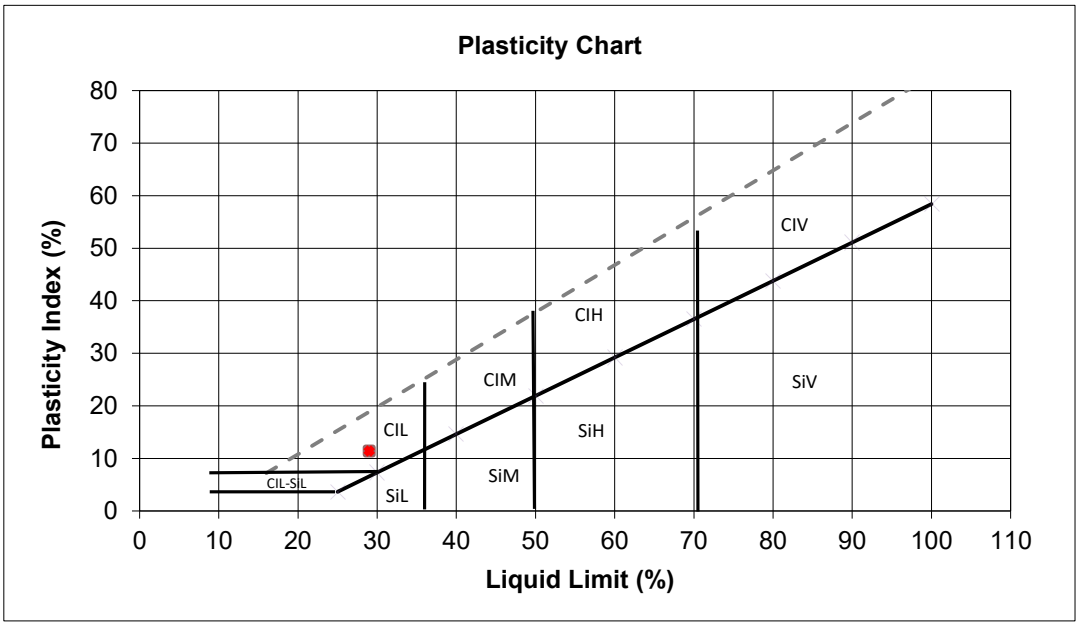
Determination of water content in accordance with BS EN ISO 17892-1:2014

Water Content (%)	**22.6**

Determination of liquid and plastic limit (one point method) in accordance with BS1377-2:2022

Material greater than 20mm, removed prior to test (%): **1.6**

Liquid Limit (%)	**29**
Plastic Limit (%)	**18**
Plasticity Index (%)	**11**
Passing 425mic (%)	**97**
Soil Classification:	**ClL**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

UKAS accredited testing laboratory No. 0744

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Report/Sample ID No: **S2170/02**

Location: BH02 at 0.05-0.45
Material Type: Reddy brown friable CLAY with very occasional gravel.

Test Results

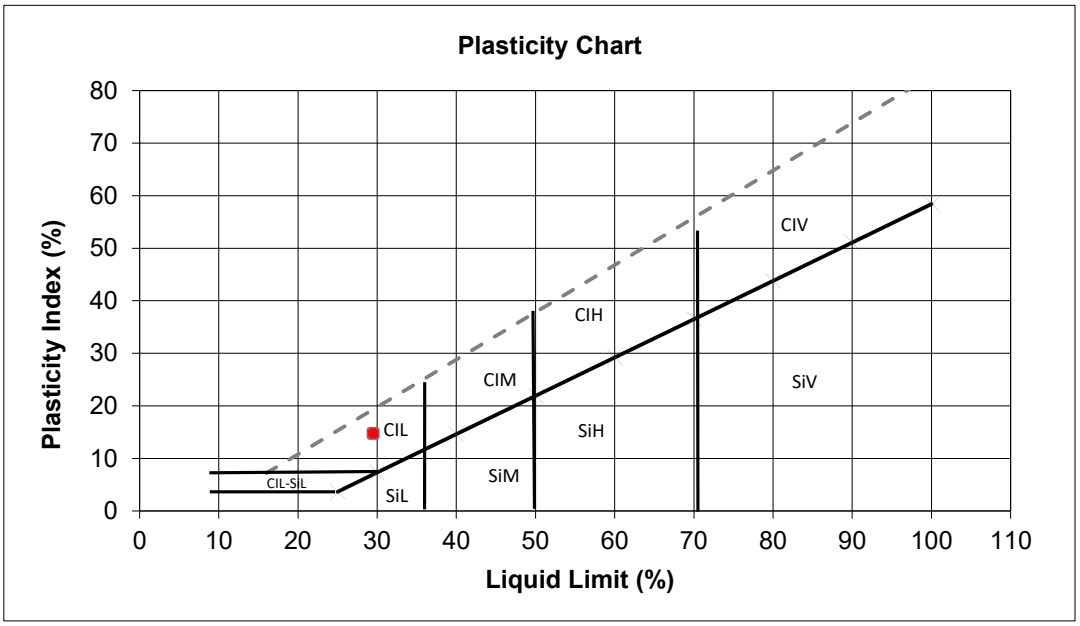
Determination of water content in accordance with BS EN ISO 17892-1:2014

Water Content (%)	**12.4**

Determination of liquid and plastic limit (one point method) in accordance with BS1377-2:2022

Material greater than 20mm, removed prior to test (%): **0.0**

Liquid Limit (%)	**29**
Plastic Limit (%)	**15**
Plasticity Index (%)	**15**
Passing 425mic (%)	**87**
Soil Classification:	**ClL**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

UKAS accredited testing laboratory No. 0744

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County Council

Highways Laboratory
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Tel (01670) 737575 • Email highwayslaboratory@northumberland.gov.uk

Report/Sample ID No: **S2170/03**

Location: BH02 at 0.45 - 0.75
Material Type: Reddy brown sandy CLAY with occasional gravel.

Test Results

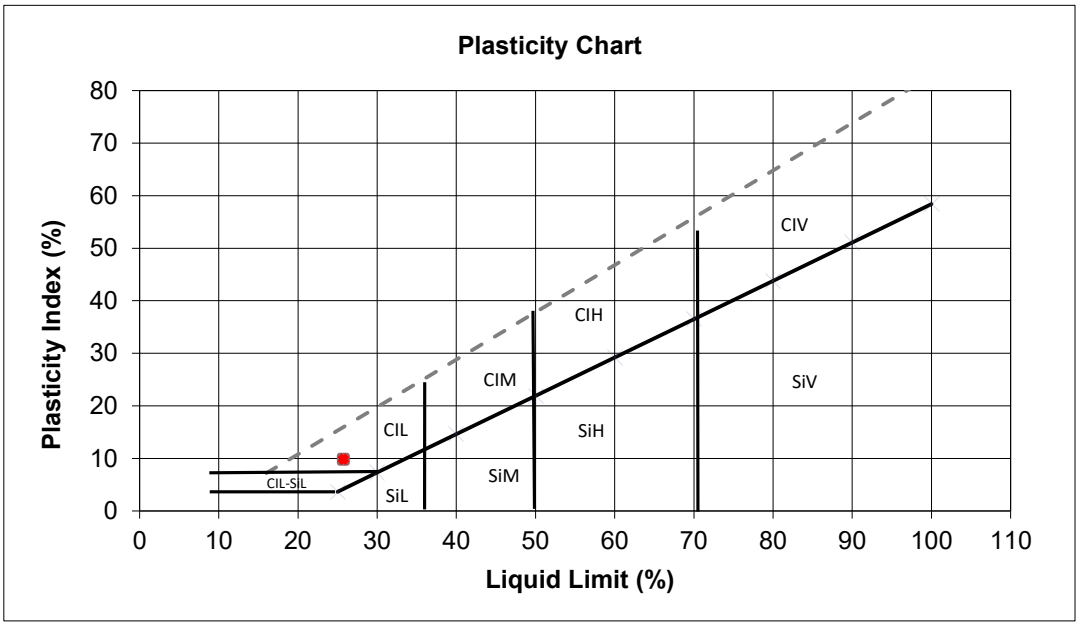
Determination of water content in accordance with BS EN ISO 17892-1:2014

Water Content (%)	**12.0**

Determination of liquid and plastic limit (one point method) in accordance with BS1377-2:2022

Material greater than 20mm, removed prior to test (%): **2.1**

Liquid Limit (%)	**26**
Plastic Limit (%)	**16**
Plasticity Index (%)	**10**
Passing 425mic (%)	**89**
Soil Classification:	**ClL**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

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Report/Sample ID No: **S2170/04**

Location: BH03 at 0.25 - 1.00
Material Type: Brown SAND.

Test Results

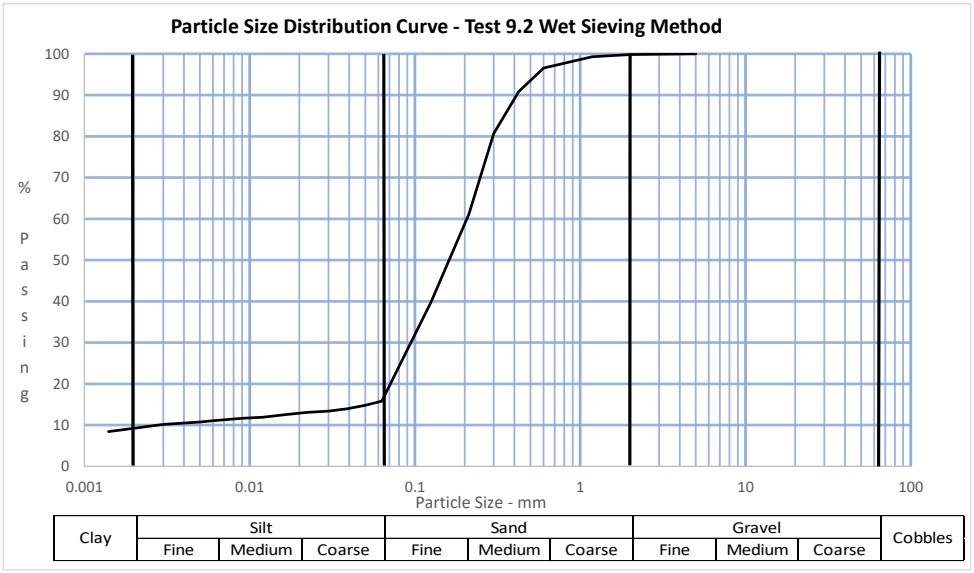
Determination of Water Content in accordance with BS EN ISO 17892-1:2014

Water Content (%) **18.3**

Determination of Particle Size Distribution in accordance with BS1377-2:2022

PSD Sieving		PSD Sedimentation	
Size (mm)	**% Passing**	**Size (mm)**	**% Passing**
125	100	0.0500	15
90	100	0.0390	14
80	100	0.0300	13
75	100	0.0220	13
63	100	0.0160	12
50	100	0.0120	12
37.5	100	0.0090	12
28	100	0.0060	11
20	100	0.0050	11
14	100	0.0030	10
10	100	0.0014	8
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	91		
0.300	81		
0.212	61		
0.150	40		
0.063	16		

Gravel %	**0**
Sand %	**84**
Silt %	**7**
Clay %	**9**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

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Report/Sample ID No: **S2170/05**

Location: BH05 at 0.80-1.00
Material Type: Brown SAND

Test Results

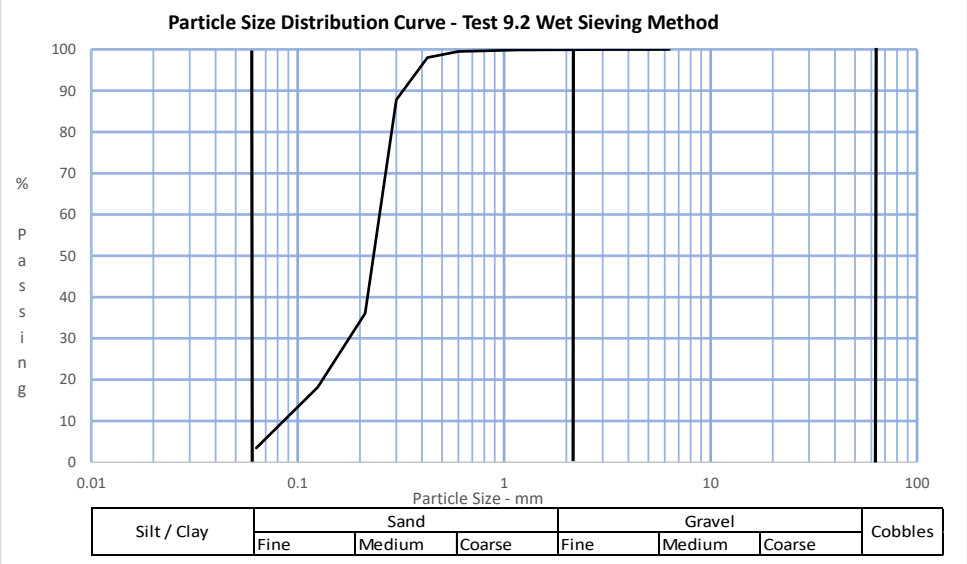
Determination of Water Content in accordance with BS EN ISO 17892-1:2014

Water Content (%) **24.2**

Determination of Particle Size Distribution in accordance with BS1377-2:2022

PSD Sieving		PSD Sedimentation	
Size (mm)	**% Passing**	**Size (mm)**	**% Passing**
125	100	No sedimentation test	
90	100		
80	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	98		
0.300	88		
0.212	36		
0.150	18		
0.063	3		

Gravel %	**0**
Sand %	**97**
Silt/Clay %	**3**



Remarks: Hydro not done due to only 3% passing 63 micron sieve.

Start of test date: 10/09/2025 **End of test date:** 16/09/2025 **Report Date:** 16/09/2025

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Report/Sample ID No: **S2170/06**

Location: BH07 at 0.90
Material Type: Reddy brown sandy CLAY with occasional gravel.

Test Results

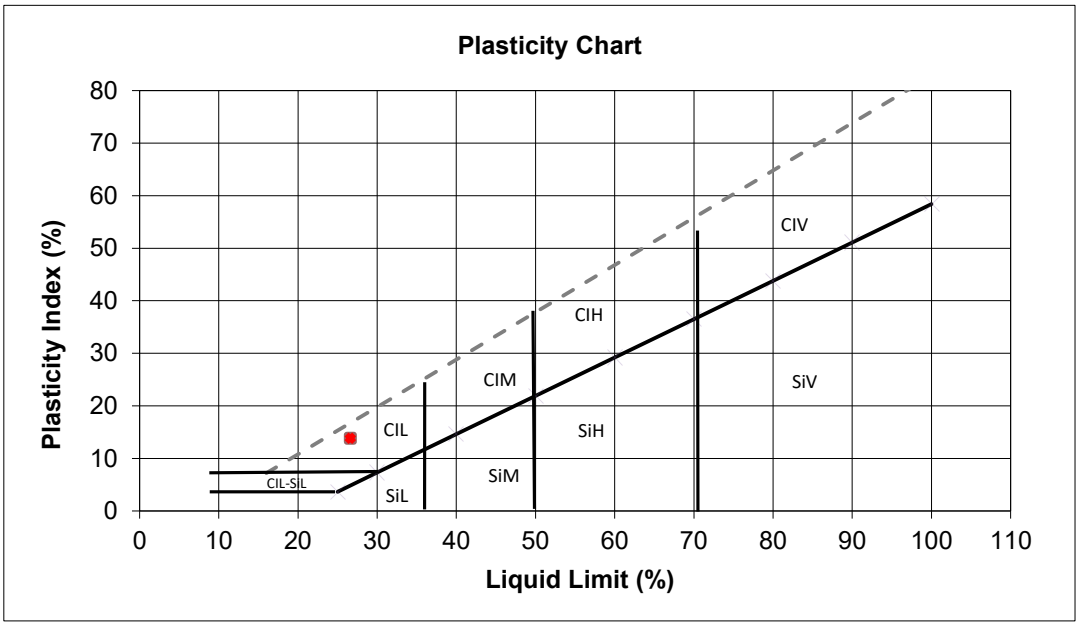
Determination of water content in accordance with BS EN ISO 17892-1:2014

Water Content (%)	**17.4**

Determination of liquid and plastic limit (one point method) in accordance with BS1377-2:2022

Material greater than 20mm, removed prior to test (%): **1.8**

Liquid Limit (%)	**27**
Plastic Limit (%)	**13**
Plasticity Index (%)	**14**
Passing 425mic (%)	**85**
Soil Classification:	**ClL**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

UKAS accredited testing laboratory No. 0744

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Report/Sample ID No: **S2170/07**

Location: BH08 at 0.80 - 1.00
Material Type: Brown, orange sandy CLAY with very occasional gravel.

Test Results

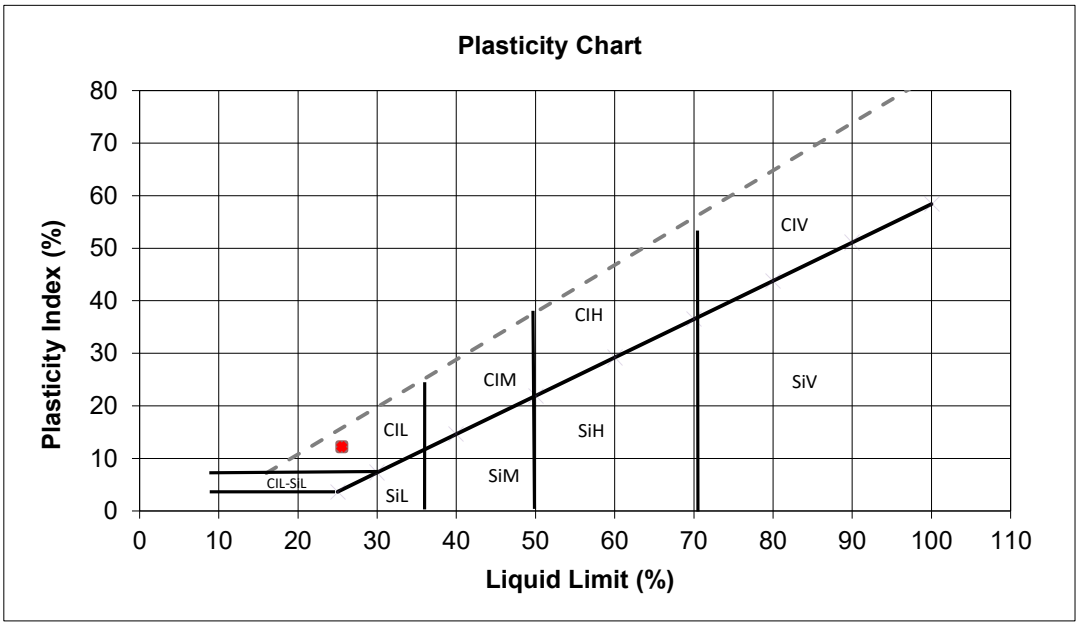
Determination of water content in accordance with BS EN ISO 17892-1:2014

Water Content (%)	**17.7**

Determination of liquid and plastic limit (one point method) in accordance with BS1377-2:2022

Material greater than 20mm, removed prior to test (%): **1.1**

Liquid Limit (%)	**26**
Plastic Limit (%)	**13**
Plasticity Index (%)	**12**
Passing 425mic (%)	**90**
Soil Classification:	**ClL**



Remarks: None

Start of test date: 10/09/2025 **End of test date:** 17/09/2025 **Report Date:** 17/09/2025

Northumberland
County Council

Highways Laboratory
Telephone: 01670 737575 - Email: highwayslaboratory@northumberland.gov.uk

SUMMARY OF PLASTIC & LIQUID TESTS

Location	Sample Number	Depth (m)	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425 mm sieve (%)	Soil Classification
BH01	S2170/01	1.90	22.6	29	18	11	97	ClL
BH02	S2170/02	0.05-0.45	12.4	29	15	15	87	ClL
BH02	S2170/03	0.45-0.75	12.0	26	16	10	89	ClL
BH07	S2170/06	0.90	17.4	27	13	14	85	ClL
BH08	S2170/07	0.80-1.00	17.7	26	13	12	90	ClL

UKAS accredited testing laboratory No. 0744 Report/Sample ID No: **S2170**

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DEVIATING SAMPLE INFORMATION

Comments:
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards. For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling. If Northumberland County Council Laboratory did not undertake the sampling. Such samples may be deviating.

Certificate of Analysis

Certificate Number	25-20360	*Issued:*	11-Sep-25

Client GEO Environmental Engineering
NW Office
31 Casshow Way
Cockermouth
Cumbria
CA13 9FY

Our Reference 25-20360

Client Reference ~ GEO2025-6701

Order No ~ (not supplied)

Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Description 16 Soil samples, 1 Misc sample.

Date Received 02-Sep-25

Date Started 02-Sep-25

Date Completed 11-Sep-25

Test Procedures Identified by prefix DETSn (details on request).

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

Approved By

Louise Cook
Contracts Manager

2139

Summary of Chemical Analysis
UKWIR Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

			Lab No	2562692	2562704
			Sample ID ~	BH02	SAT01
			Depth ~	1.10-1.30	0.00-0.30
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	26/08/2025	28/08/2025
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
pH	DETSC 2008#		pH	7.6	7.6
Redox Potential	DETSC 2016*	-500	mV	150	150
Total VOCs	DETSC 3431*	0.01	mg/kg	0.01	< 0.01
BTEX + MTBE	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Total SVOCs	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Cresols and Chlorinated Phenols	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
TICs (Ethers,Ketones,Aldehydes,Amines,Nitrobenzene)			mg/kg	None	None

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

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

			Lab No	2562691	2562692	2562693	2562694	2562695	2562696	2562697
			Sample ID ~	BH01	BH02	BH04	BH04	BH05	BH05	BH06
			Depth ~	0.60-1.00	1.10-1.30	0.00-0.40	0.50-1.00	0.15-0.70	0.80-1.00	0.05-0.50
			Other ID ~							
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	27/08/2025
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg			15		9.8		15
Cadmium	DETSC 2301#	0.1	mg/kg			< 0.1		< 0.1		0.2
Chromium III	DETSC 2301*	0.15	mg/kg			6.0		5.2		0.38
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0		< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg			9.3		7.4		9.9
Lead	DETSC 2301#	0.3	mg/kg			13		10		8.9
Mercury	DETSC 2325#	0.05	mg/kg			< 0.05		< 0.05		< 0.05
Nickel	DETSC 2301#	1	mg/kg			8.4		7.6		2.5
Selenium	DETSC 2301#	0.5	mg/kg			< 0.5		< 0.5		0.6
Zinc	DETSC 2301#	1	mg/kg			24		16		15
Inorganics										
Conductivity (25oC)	DETSC 2009	1	uS/cm		440					
pH	DETSC 2008#		pH	8.3	7.6	8.4	7.2	8.0	7.2	7.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg			< 0.1		0.2		< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%			0.7		1.6		3.8
Redox Potential	DETSC 2016*	-500	mV		150					
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	58		23	18	110	26	26
Petroleum Hydrocarbons										
EPH >C10-C16	DETSC 3521*	10	mg/kg		< 10.00					
EPH >C16-C40	DETSC 3521*	10	mg/kg		< 10.00					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg			< 1.50		< 1.50		< 1.50
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg			< 1.20		< 1.20		< 1.20
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg			< 1.50		< 1.50		< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40		< 3.40		< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40		< 3.40		< 3.40
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40		< 3.40		< 3.40
Aliphatic >EC35-EC40 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40		< 3.40		< 3.40
Aliphatic >EC40-EC44 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40		< 3.40		< 3.40
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aliphatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aliphatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01		< 0.01		< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg			< 0.90		< 0.90		< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg			< 0.50		< 0.50		< 0.50

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

			Lab No	2562691	2562692	2562693	2562694	2562695	2562696	2562697
			Sample ID ~	BH01	BH02	BH04	BH04	BH05	BH05	BH06
			Depth ~	0.60-1.00	1.10-1.30	0.00-0.40	0.50-1.00	0.15-0.70	0.80-1.00	0.05-0.50
			Other ID ~							
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	27/08/2025
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg			< 0.60		< 0.60		< 0.60
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg			< 1.40		< 1.40		< 1.40
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg			< 1.40		< 1.40		< 1.40
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg			< 1.40		< 1.40		< 1.40
Aromatic >EC35-EC40 Cleanup	DETSC 3521*	1.4	mg/kg			< 1.40		< 1.40		< 1.40
Aromatic >EC40-EC44 Cleanup	DETSC 3521*	1.4	mg/kg			< 1.40		< 1.40		< 1.40
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aromatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
Aromatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
TPH Ali/Aro C5-C40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
TPH Ali/Aro C5-C44 Cleanup	DETSC 3521*	10	mg/kg			< 10.00		< 10.00		< 10.00
VPH (C5-C10)	DETSC 3321*	0.1	mg/kg		< 0.1					
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Fluorene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Phenanthrene	DETSC 3301	0.1	mg/kg			0.14		< 0.10		< 0.10
Anthracene	DETSC 3301	0.1	mg/kg			0.10		< 0.10		< 0.10
Fluoranthene	DETSC 3301	0.1	mg/kg			0.34		< 0.10		< 0.10
Pyrene	DETSC 3301	0.1	mg/kg			0.30		< 0.10		< 0.10
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			0.17		< 0.10		< 0.10
Chrysene	DETSC 3301	0.1	mg/kg			0.20		< 0.10		< 0.10
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg			0.19		< 0.10		< 0.10
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			0.16		< 0.10		< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg			< 0.10		< 0.10		< 0.10
PAH 16 Total	DETSC 3301	1.6	mg/kg			< 1.6		< 1.6		< 1.6
Phenols										
Cresols	DETSC 3451*	0.5	mg/kg							
Naphthols	DETSC 3451*	0.5	mg/kg							
Phenol	DETSC 3451*	0.5	mg/kg							
Resorcinol	DETSC 3451*	0.5	mg/kg							
Trimethylphenol	DETSC 3451*	0.5	mg/kg							
Xylenols & Ethylphenols	DETSC 3451*	0.5	mg/kg							
Phenols, Total	DETSC 3451*	5	mg/kg							

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	2562691	2562692	2562693	2562694	2562695	2562696	2562697	
Sample ID ~	BH01	BH02	BH04	BH04	BH05	BH05	BH06	
Depth ~	0.60-1.00	1.10-1.30	0.00-0.40	0.50-1.00	0.15-0.70	0.80-1.00	0.05-0.50	
Other ID ~								
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
Sampling Date ~	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025	27/08/2025	
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s	
Test	**Method**	**LOD**	**Units**					
OCPs								
alpha-BHC	DETSC 3433*	0.1	mg/kg					
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg					
beta-BHC	DETSC 3433*	0.1	mg/kg					
delta-BHC	DETSC 3433*	0.1	mg/kg					
Heptachlor	DETSC 3433*	0.1	mg/kg					
Aldrin	DETSC 3433*	0.1	mg/kg					
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg					
gamma-Chlordane	DETSC 3433*	0.1	mg/kg					
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg					
4,4-DDE	DETSC 3433*	0.1	mg/kg					
Dieldrin	DETSC 3433*	0.1	mg/kg					
Endrin	DETSC 3433*	0.1	mg/kg					
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg					
Endrin aldehyde	DETSC 3433*	0.1	mg/kg					
4,4-DDT	DETSC 3433*	0.1	mg/kg					
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg					
Methoxychlor	DETSC 3433*	0.1	mg/kg					
Endrin ketone	DETSC 3433*	0.1	mg/kg					
OPPs								
Dichlorvos	DETSC 3433*	0.1	mg/kg					
Mevinphos	DETSC 3433*	0.1	mg/kg					
Demeton-O	DETSC 3433*	0.1	mg/kg					
Ethoprop	DETSC 3433*	0.1	mg/kg					
Naled	DETSC 3433*	0.1	mg/kg					
Phorate	DETSC 3433*	0.1	mg/kg					
Demeton-S	DETSC 3433*	0.1	mg/kg					
Diazinon	DETSC 3433*	0.1	mg/kg					
Disulfoton	DETSC 3433*	0.1	mg/kg					
Methylparathion	DETSC 3433*	0.1	mg/kg					
Ronnel	DETSC 3433*	0.1	mg/kg					
Fenthion	DETSC 3433*	0.1	mg/kg					
Chlopyrifos	DETSC 3433*	0.1	mg/kg					
Trichloronate	DETSC 3433*	0.1	mg/kg					
Merphos	DETSC 3433*	0.1	mg/kg					
Stirofos	DETSC 3433*	0.1	mg/kg					
Tokuthion	DETSC 3433*	0.1	mg/kg					
Fensulfothion	DETSC 3433*	0.1	mg/kg					
Bolstar	DETSC 3433*	0.1	mg/kg					
Azinphos methyl	DETSC 3433*	0.1	mg/kg					
Coumaphos	DETSC 3433*	0.1	mg/kg					

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

				Lab No	2562698	2562699	2562700	2562701	2562702	2562703	2562704
				Sample ID ~	BH06	BH07	BH08	BH08	HP01	HP02	SAT01
				Depth ~	0.40-0.70	0.00-0.30	0.00-0.20	0.20-0.80	0.00-0.40	0.00-0.45	0.00-0.30
				Other ID ~							
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	27/08/2025	27/08/2025	27/08/2025	27/08/2025	28/08/2025	28/08/2025	28/08/2025
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Metals											
Arsenic	DETSC 2301#	0.2	mg/kg		17	19		8.8	12	25
Cadmium	DETSC 2301#	0.1	mg/kg		0.2	0.6		< 0.1	< 0.1	0.5
Chromium III	DETSC 2301*	0.15	mg/kg		12	8.7		3.3	4.9	12
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg		15	33		16	15	130
Lead	DETSC 2301#	0.3	mg/kg		39	120		56	66	270
Mercury	DETSC 2325#	0.05	mg/kg		0.05	0.08		0.08	0.05	0.15
Nickel	DETSC 2301#	1	mg/kg		11	9.5		5.9	8.9	36
Selenium	DETSC 2301#	0.5	mg/kg		< 0.5	< 0.5		< 0.5	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg		98	170		30	64	300
Inorganics											
Conductivity (25oC)	DETSC 2009	1	uS/cm							1100
pH	DETSC 2008#		pH	7.8	8.0	6.8	6.8	8.2	6.2	7.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.4	0.7		0.7	0.5	0.4
Total Organic Carbon	DETSC 2084#	0.5	%		2.8	4.0		3.0	2.5	10
Redox Potential	DETSC 2016*	-500	mV							150
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	11	23	26	11	< 10	< 10	12
Petroleum Hydrocarbons											
EPH >C10-C16	DETSC 3521*	10	mg/kg							< 10.00
EPH >C16-C40	DETSC 3521*	10	mg/kg							< 10.00
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg							
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg							
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg							
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg							
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg							
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg							
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg							
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg							
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg							
Aliphatic >EC35-EC40 Cleanup	DETSC 3521*	3.4	mg/kg							
Aliphatic >EC40-EC44 Cleanup	DETSC 3521*	3.4	mg/kg							
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg							
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg							
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg							
Aliphatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg							
Aliphatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg							
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg							
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg							
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg							
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg							
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg							

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

	Lab No	2562698	2562699	2562700	2562701	2562702	2562703	2562704
	Sample ID ~	BH06	BH07	BH08	BH08	HP01	HP02	SAT01
	Depth ~	0.40-0.70	0.00-0.30	0.00-0.20	0.20-0.80	0.00-0.40	0.00-0.45	0.00-0.30
	Other ID ~							
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	27/08/2025	27/08/2025	27/08/2025	27/08/2025	28/08/2025	28/08/2025	28/08/2025
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg						
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg						
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg						
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg						
Aromatic >EC35-EC40 Cleanup	DETSC 3521*	1.4	mg/kg						
Aromatic >EC40-EC44 Cleanup	DETSC 3521*	1.4	mg/kg						
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg						
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg						
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg						
Aromatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg						
Aromatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg						
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg						
TPH Ali/Aro C5-C40 Cleanup	DETSC 3521*	10	mg/kg						
TPH Ali/Aro C5-C44 Cleanup	DETSC 3521*	10	mg/kg						
VPH (C5-C10)	DETSC 3321*	0.1	mg/kg						< 0.1
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg		0.15	< 0.10		0.16	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Fluorene	DETSC 3301	0.1	mg/kg		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Phenanthrene	DETSC 3301	0.1	mg/kg		0.35	0.52		0.46	0.21	< 0.10
Anthracene	DETSC 3301	0.1	mg/kg		0.18	0.16		0.16	0.16	< 0.10
Fluoranthene	DETSC 3301	0.1	mg/kg		1.0	2.1		1.6	0.74	0.34
Pyrene	DETSC 3301	0.1	mg/kg		0.83	1.7		1.3	0.58	0.32
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg		0.57	0.91		0.84	0.35	0.22
Chrysene	DETSC 3301	0.1	mg/kg		0.57	0.93		0.86	0.36	0.25
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg		0.43	0.72		0.74	0.37	0.25
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg		0.35	0.46		0.48	0.28	0.17
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg		0.47	0.92		0.88	0.41	0.24
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg		0.63	1.0		0.79	0.42	< 0.10
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg		< 0.10	0.11		< 0.10	0.11	< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg		< 0.10	0.45		0.55	< 0.10	< 0.10
PAH 16 Total	DETSC 3301	1.6	mg/kg		5.6	9.9		8.9	3.9	1.8
Phenols									
Cresols	DETSC 3451*	0.5	mg/kg						
Naphthols	DETSC 3451*	0.5	mg/kg						
Phenol	DETSC 3451*	0.5	mg/kg						
Resorcinol	DETSC 3451*	0.5	mg/kg						
Trimethylphenol	DETSC 3451*	0.5	mg/kg						
Xylenols & Ethylphenols	DETSC 3451*	0.5	mg/kg						
Phenols, Total	DETSC 3451*	5	mg/kg						

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

Lab No	2562698	2562699	2562700	2562701	2562702	2562703	2562704
Sample ID ~	BH06	BH07	BH08	BH08	HP01	HP02	SAT01
Depth ~	0.40-0.70	0.00-0.30	0.00-0.20	0.20-0.80	0.00-0.40	0.00-0.45	0.00-0.30
Other ID ~							
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	27/08/2025	27/08/2025	27/08/2025	27/08/2025	28/08/2025	28/08/2025	28/08/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
OCPs										
alpha-BHC	DETSC 3433*	0.1	mg/kg							
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg							
beta-BHC	DETSC 3433*	0.1	mg/kg							
delta-BHC	DETSC 3433*	0.1	mg/kg							
Heptachlor	DETSC 3433*	0.1	mg/kg							
Aldrin	DETSC 3433*	0.1	mg/kg							
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg							
gamma-Chlordane	DETSC 3433*	0.1	mg/kg							
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg							
4,4-DDE	DETSC 3433*	0.1	mg/kg							
Dieldrin	DETSC 3433*	0.1	mg/kg							
Endrin	DETSC 3433*	0.1	mg/kg							
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg							
Endrin aldehyde	DETSC 3433*	0.1	mg/kg							
4,4-DDT	DETSC 3433*	0.1	mg/kg							
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg							
Methoxychlor	DETSC 3433*	0.1	mg/kg							
Endrin ketone	DETSC 3433*	0.1	mg/kg							
OPPs										
Dichlorvos	DETSC 3433*	0.1	mg/kg							
Mevinphos	DETSC 3433*	0.1	mg/kg							
Demeton-O	DETSC 3433*	0.1	mg/kg							
Ethoprop	DETSC 3433*	0.1	mg/kg							
Naled	DETSC 3433*	0.1	mg/kg							
Phorate	DETSC 3433*	0.1	mg/kg							
Demeton-S	DETSC 3433*	0.1	mg/kg							
Diazinon	DETSC 3433*	0.1	mg/kg							
Disulfoton	DETSC 3433*	0.1	mg/kg							
Methylparathion	DETSC 3433*	0.1	mg/kg							
Ronnel	DETSC 3433*	0.1	mg/kg							
Fenthion	DETSC 3433*	0.1	mg/kg							
Chlopyrifos	DETSC 3433*	0.1	mg/kg							
Trichloronate	DETSC 3433*	0.1	mg/kg							
Merphos	DETSC 3433*	0.1	mg/kg							
Stirofos	DETSC 3433*	0.1	mg/kg							
Tokuthion	DETSC 3433*	0.1	mg/kg							
Fensulfothion	DETSC 3433*	0.1	mg/kg							
Bolstar	DETSC 3433*	0.1	mg/kg							
Azinphos methyl	DETSC 3433*	0.1	mg/kg							
Coumaphos	DETSC 3433*	0.1	mg/kg							

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

			Lab No	2562705	2562706
			Sample ID ~	SAT02	SAT02
			Depth ~	0.00-0.60	0.60-0.90
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	28/08/2025	28/08/2025
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	280	1.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	13	5.4
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	17	15
Lead	DETSC 2301#	0.3	mg/kg	40	34
Mercury	DETSC 2325#	0.05	mg/kg	0.07	0.06
Nickel	DETSC 2301#	1	mg/kg	14	9.7
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	91	44
Inorganics					
Conductivity (25oC)	DETSC 2009	1	uS/cm		
pH	DETSC 2008#		pH	8.2	8.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.5	1.4
Redox Potential	DETSC 2016*	-500	mV		
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	71	34
Petroleum Hydrocarbons					
EPH >C10-C16	DETSC 3521*	10	mg/kg		
EPH >C16-C40	DETSC 3521*	10	mg/kg		
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg	< 1.20	< 1.20
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC35-EC40 Cleanup	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC40-EC44 Cleanup	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aliphatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aliphatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg	< 0.90	< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg	< 0.50	5.73

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

			Lab No	2562705	2562706
			Sample ID ~	SAT02	SAT02
			Depth ~	0.00-0.60	0.60-0.90
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	28/08/2025	28/08/2025
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg	3.25	7.37
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg	1.85	11.63
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg	73.85	22.90
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg	72.00	11.28
Aromatic >EC35-EC40 Cleanup	DETSC 3521*	1.4	mg/kg	142.4	< 1.40
Aromatic >EC40-EC44 Cleanup	DETSC 3521*	1.4	mg/kg	29.85	< 1.40
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg	77.09	36.00
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg	77.09	36.00
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg	219.5	36.00
Aromatic C5-C40 Cleanup	DETSC 3521*	10	mg/kg	219.5	36.00
Aromatic C5-C44 Cleanup	DETSC 3521*	10	mg/kg	249.4	36.00
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg	77.09	36.00
TPH Ali/Aro C5-C40 Cleanup	DETSC 3521*	10	mg/kg	219.5	36.00
TPH Ali/Aro C5-C44 Cleanup	DETSC 3521*	10	mg/kg	249.4	36.00
VPH (C5-C10)	DETSC 3321*	0.1	mg/kg		
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	0.16
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Phenanthrene	DETSC 3301	0.1	mg/kg	0.13	0.18
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	0.13
Fluoranthene	DETSC 3301	0.1	mg/kg	0.22	< 0.10
Pyrene	DETSC 3301	0.1	mg/kg	0.28	< 0.10
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.51	< 0.10
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.23	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6
Phenols					
Cresols	DETSC 3451*	0.5	mg/kg		< 0.50
Naphthols	DETSC 3451*	0.5	mg/kg		< 0.50
Phenol	DETSC 3451*	0.5	mg/kg		< 0.50
Resorcinol	DETSC 3451*	0.5	mg/kg		< 0.50
Trimethylphenol	DETSC 3451*	0.5	mg/kg		< 0.50
Xylenols & Ethylphenols	DETSC 3451*	0.5	mg/kg		< 0.50
Phenols, Total	DETSC 3451*	5	mg/kg		< 5.0

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbr

			Lab No	2562705	2562706
			Sample ID ~	SAT02	SAT02
			Depth ~	0.00-0.60	0.60-0.90
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	28/08/2025	28/08/2025
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
OCPs					
alpha-BHC	DETSC 3433*	0.1	mg/kg		< 0.1
gamma-BHC (Lindane)	DETSC 3433*	0.1	mg/kg		< 0.1
beta-BHC	DETSC 3433*	0.1	mg/kg		< 0.1
delta-BHC	DETSC 3433*	0.1	mg/kg		< 0.1
Heptachlor	DETSC 3433*	0.1	mg/kg		< 0.1
Aldrin	DETSC 3433*	0.1	mg/kg		< 0.1
Heptachlor epoxide	DETSC 3433*	0.1	mg/kg		< 0.1
gamma-Chlordane	DETSC 3433*	0.1	mg/kg		< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3433*	0.1	mg/kg		< 0.1
4,4-DDE	DETSC 3433*	0.1	mg/kg		< 0.1
Dieldrin	DETSC 3433*	0.1	mg/kg		< 0.1
Endrin	DETSC 3433*	0.1	mg/kg		< 0.1
Endosulphan II & 4,4-DDD	DETSC 3433*	0.1	mg/kg		< 0.1
Endrin aldehyde	DETSC 3433*	0.1	mg/kg		< 0.1
4,4-DDT	DETSC 3433*	0.1	mg/kg		< 0.1
Endosulphan sulphate	DETSC 3433*	0.1	mg/kg		< 0.1
Methoxychlor	DETSC 3433*	0.1	mg/kg		< 0.1
Endrin ketone	DETSC 3433*	0.1	mg/kg		< 0.1
OPPs					
Dichlorvos	DETSC 3433*	0.1	mg/kg		< 0.1
Mevinphos	DETSC 3433*	0.1	mg/kg		< 0.1
Demeton-O	DETSC 3433*	0.1	mg/kg		< 0.1
Ethoprop	DETSC 3433*	0.1	mg/kg		0.1
Naled	DETSC 3433*	0.1	mg/kg		< 0.1
Phorate	DETSC 3433*	0.1	mg/kg		< 0.1
Demeton-S	DETSC 3433*	0.1	mg/kg		< 0.1
Diazinon	DETSC 3433*	0.1	mg/kg		< 0.1
Disulfoton	DETSC 3433*	0.1	mg/kg		< 0.1
Methylparathion	DETSC 3433*	0.1	mg/kg		< 0.1
Ronnel	DETSC 3433*	0.1	mg/kg		< 0.1
Fenthion	DETSC 3433*	0.1	mg/kg		< 0.1
Chlopyrifos	DETSC 3433*	0.1	mg/kg		< 0.1
Trichloronate	DETSC 3433*	0.1	mg/kg		< 0.1
Merphos	DETSC 3433*	0.1	mg/kg		< 0.1
Stirofos	DETSC 3433*	0.1	mg/kg		< 0.1
Tokuthion	DETSC 3433*	0.1	mg/kg		< 0.1
Fensulfothion	DETSC 3433*	0.1	mg/kg		< 0.1
Bolstar	DETSC 3433*	0.1	mg/kg		< 0.1
Azinphos methyl	DETSC 3433*	0.1	mg/kg		< 0.1
Coumaphos	DETSC 3433*	0.1	mg/kg		< 0.1

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	2562692	2562704
Sample ID ~	BH02	SAT01
Depth ~	1.10-1.30	0.00-0.30
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	26/08/2025	28/08/2025
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
VOCs					
Vinyl Chloride	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	2562692	2562704
Sample ID ~	BH02	SAT01
Depth ~	1.10-1.30	0.00-0.30
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	26/08/2025	28/08/2025
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
sec-butylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
VOC TICs - Semi Quant	DETSC 3431*			Y	N
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	2562692	2562704
Sample ID ~	BH02	SAT01
Depth ~	1.10-1.30	0.00-0.30
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	26/08/2025	28/08/2025
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg	< 0.1	
Anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	
Pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Chrysene	DETSC 3433	0.1	mg/kg	< 0.1	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	< 0.1	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
SVOC TICs - Semi Quant	DETSC 3433*			N	N
VOC TICs					
2,6,10-Trimethyltridecane (TIC)	DETSC 3431*		mg/kg	13.35	
Blank (TIC)	DETSC 3431*		mg/kg		None
Naphthalene, 1,7-dimethyl- (TIC)	DETSC 3431*		mg/kg	7.911	
Naphthalene, 2,6-dimethyl- (TIC)	DETSC 3431*		mg/kg	11.75	

Summary of Asbestos Analysis
Soil Samples

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	Sample ID	Sample Location	Material Type*	Result	Comment*	Analyst
2562693	BH04 0.00-0.40		SOIL	NAD	none	Vicky Convery
2562695	BH05 0.15-0.70		SOIL	NAD	none	Vicky Convery
2562697	BH06 0.05-0.50		SOIL	NAD	none	Vicky Convery
2562699	BH07 0.00-0.30		SOIL	NAD	none	Vicky Convery
2562700	BH08 0.00-0.20		SOIL	Chrysotile	Chrysotile present as fibre bundles	Vicky Convery
2562702	HP01 0.00-0.40		SOIL	NAD	none	Vicky Convery
2562703	HP02 0.00-0.45		SOIL	NAD	none	Vicky Convery
2562704	SAT01 0.00-0.30		SOIL	NAD	none	Vicky Convery
2562705	SAT02 0.00-0.60		SOIL	NAD	none	Vicky Convery
2562706	SAT02 0.60-0.90		SOIL	NAD	none	Vicky Convery
2562707	Fragment Of Suspected ACM		Cement	Chrysotile	none	Vicky Convery

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

Information in Support of the Analytical Results

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract ~ Newhouse Farm, Station road, Drigg, Cumbria

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2562691	BH01 0.60-1.00 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562692	BH02 1.10-1.30 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562693	BH04 0.00-0.40 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562694	BH04 0.50-1.00 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562695	BH05 0.15-0.70 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562696	BH05 0.80-1.00 SOIL	26/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562697	BH06 0.05-0.50 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562698	BH06 0.40-0.70 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562699	BH07 0.00-0.30 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562700	BH08 0.00-0.20 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562701	BH08 0.20-0.80 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562702	HP01 0.00-0.40 SOIL	28/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562703	HP02 0.00-0.45 SOIL	28/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562704	SAT01 0.00-0.30 SOIL	28/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562705	SAT02 0.00-0.60 SOIL	28/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562706	SAT02 0.60-0.90 SOIL	28/08/25	GJ 250ml, GJ 60ml, PT 1L		
2562707	Fragment Of Suspected ACM MISC	27/08/25	PT 1L		

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

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

Information in Support of the Analytical Results

Our Ref 25-20360
Client Ref ~ GEO2025-6701
Contract ~ Newhouse Farm, Station road, Drigg, Cumbria

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
# -MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report Ver 25.09.01

Certificate of Analysis

Certificate Number	25-21262	*Issued:*	17-Sep-25

Client GEO Environmental Engineering
NW Office
31 Casshow Way
Cockermouth
Cumbria
CA13 9FY

Our Reference	25-21262
Client Reference ~	GEO2025-6701
Order No ~	(not supplied)
Contract Title ~	Newhouse Farm, Station road, Drigg, Cumbria
Description	1 Soil sample.
Date Received	02-Sep-25
Date Started	12-Sep-25
Date Completed	17-Sep-25
Test Procedures	Identified by prefix DETSn (details on request).

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

Approved By

Reyhan Irfan
Operations Manager

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Summary of Asbestos Analysis

Samples

Our Ref 25-21262
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	Sample ID	Sample Location	Material Type	Result	Comment*	Analyst

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

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 25-21262
Client Ref ~ GEO2025-6701
Contract Title ~ Newhouse Farm, Station road, Drigg, Cumbria

Lab No	2567870
Sample ID ~	BH08
Depth ~	0.00-0.20
Other ID ~	
Sample Type ~	
Sampling Date ~	27/08/2025
Sampling Time ~	

Test	Method	LOQ	Units	
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.002**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	0.002
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample			g	479.62
ACMs present*			type	
Mass of ACM in sample			g	
% ACM by mass			%	
% asbestos in ACM			%	
% asbestos in sample			%	
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample			Mass %	na
% Chrysotile bundles in sample			Mass %	0.002
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample			Mass %	na
% Chrysotile fibres in sample			Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres			Fibres/g	na
Chrysotile fibres			Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample
The results are based on dry weight.

Information in Support of the Analytical Results

Our Ref 25-21262
Client Ref ~ GEO2025-6701
Contract ~ Newhouse Farm, Station road, Drigg, Cumbria

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2567870	BH08 0.00-0.20 SOIL	27/08/25	GJ 250ml, GJ 60ml, PT 1L		

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

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

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
# -MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report Ver 25.09.01

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?	☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth *See Note [2]*	Maximum site concentration *See Note [3]*	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	0.01	N/A	0.01	N/A	N/A
Total BTEX & MTBE		0.1	Pass	0.01	N/A	<0.01	N/A	N/A
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	0.1	N/A	<0.1	N/A	N/A
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.1	N/A	<0.1	N/A	N/A
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	10	N/A	<10	N/A	N/A
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	10	N/A	<10	N/A	N/A
Phenols* (from SVOC analysis)		2	Pass	0.1	N/A	<0.1	N/A	N/A
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	0.1	N/A	<0.1	N/A	N/A
Ethers*	Only where identified	0.5	Pass	N/A	N/A	None	N/A	N/A
Nitrobenzene*		0.5	Pass	N/A	N/A	None	N/A	N/A
Ketones*		0.5	Pass	N/A	N/A	None	N/A	N/A
Aldehydes*		0.5	Pass	N/A	N/A	None	N/A	N/A
Amines		Fail	Pass	N/A	N/A	None	N/A	N/A
Corrosive	Conductivity, Redox and pH	Pass	*See Note [1]*	N/A	N/A	N/A	N/A	N/A

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

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&
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