



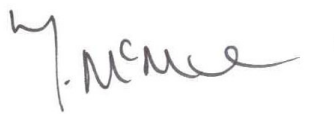
PHASE II GROUND INVESTIGATION REPORT



**OUTREACH COMMUNITY HUB, STATION ROAD, SHOTTON COLLIERY,
CO. DURHAM, DH6 2JL
PREPARED FOR D3 ASSOCIATES**



QUALITY CONTROL

Project No.	GEOL23-7823	Client	D3 Associates
Report Type	Phase II Ground Investigation Report		
Project Type	Proposed New Youth Club		
Site Address	Outreach Community Hub, Station Road, Shotton Colliery, Co. Durham, DH6 2JL		
NGR	439180, 541320		
Date	30/06/2023		
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REPORT REVISION HISTORY				
Issue	Description	Date	Author	Approval
1	Final Issue	30/06/2023	WH	TMc



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PHASE II GROUND INVESTIGATION REPORT

1.0 Introduction

Geol Consultants Limited (GEOL) were instructed by D3 Associates to undertake appropriate ground investigation works to facilitate a proposed new Youth Club building and overflow car park at Shotton Parish Community Park, situated off Station Road in the Co. Durham village of Shotton Colliery. The Youth Club building is to replace an existing changing room facility once demolished and the overflow car park will adjoin the existing car park sited in the south of the Community Park.

A copy of the External Works Plan provided by D3 Associates can be seen attached in Appendix I. A Phase I Preliminary Contamination Risk Assessment (PCRA) was completed for the site, and considers the new development proposals, by GEOL, reference GEOL23-7823, dated April 2023. The PCRA should be read in conjunction with this Phase II Ground Investigation Report (GIR).

The purpose of this report is to provide information relating to the following to assist with the proposed building extension.

- ▼ Identify the ground conditions below the proposed new Youth Club building and overflow car park and to assess the geotechnical properties of the underlying superficial deposits to assist with foundation and car parking designs
- ▼ Determine the levels of contamination within the shallow deposits, to assess the impacts, if any, they may have on the site end-users and construction workforce (Human Health)
- ▼ Determine the scope of any further investigation works or remediation measures required for the site prior to commencing with the proposed building extension works

The information contained in this GIR is limited to the area of the site as shown on the proposed development layout plan attached in Appendix I, and to those areas accessible at the time of the ground investigation works being undertaken. When considering the scope of works completed for the development proposals, any features or issues not specifically mentioned cannot be assumed to have been covered.

2.0 Scope of Works

To determine the ground conditions below the site area, the ground investigation works completed by GEOL comprised the sinking of 8 no. windowless sampling boreholes, labelled BH01 to BH03 and BHA to BHE. Detailed descriptions of the strata encountered during the investigation works, together with the results of all insitu field testing, are presented on the borehole record sheets attached in Appendix II. The investigation positions can be seen on the borehole location plan attached in Appendix II.

PHASE II GROUND INVESTIGATION REPORT

3.0 Ground Conditions

3.1 Soil Profile

A summary of the ground conditions encountered below the site can be seen in the Table below. The proposed Youth Club building was targeted by BH01 to BH03 whereas the proposed overflow car parking area was targeted by BHA to BHE.

Strata	Depths Recorded	Description & Comments
MADE GROUND	From 0.00m (GL) up to 0.20m to 0.50m	The made ground comprised mainly of dark brown slightly gravelly sand / sandy gravel with fragments of brick and sandstone and slightly sandy slightly gravelly clay with fragments of brick. The made ground deposits were similar over both site areas
SUPERFICIAL GEOLOGY Devensian Till	From 0.20m to 0.50m up to 1.00m to 4.45m (base of boreholes)	The natural superficial deposits comprise firm and stiff dark brown and grey mottled slightly sandy slightly gravelly CLAY with occasional cobbles. These deposits are thought to be representative of Devensian Till (glacially derived clay deposits)

3.2 Groundwater

An ingress of water was recorded at a depth of 2.90m at the location of BH03 only. Based on the water observations recorded during the investigation works, significant or heavy water ingresses are unlikely to occur within construction related excavations. However, it would be 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. Adequate lateral trench support will also be required for excavations, 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 initial deposits may be susceptible to deterioration, if left open to the natural elements for any significant period of time.

4.0 Insitu Testing

4.1 Insitu Standard Penetration Tests

Insitu standard penetration tests (SPT's) were undertaken within the natural clay deposits encountered at the borehole locations (BH01 to BH03), to determine the relative density / strength of the deposits, and a summary of the results can be seen in the Table on the following page.

PHASE II GROUND INVESTIGATION REPORT

4.0 Insitu Testing (Cont'd)

4.1 Insitu Standard Penetration Tests (Cont'd)

Strata	SPT Results	Comments
SUPERFICIAL GEOLOGY Devensian Till	SPT 'N' values in the range of 12 up to 36 were recorded	The SPT 'N' values for the natural clay deposits are indicative of firm and stiff strata

4.2 Insitu Hand Shear Vane Tests

Insitu hand shear vane tests were undertaken within the natural clay deposits encountered at the borehole locations (BH01 to BH03). A summary of the results obtained can be seen in the Table below.

Strata	Results	Comments
SUPERFICIAL GEOLOGY Devensian Till	Shear strength values ranging between 68kN/m ² up to 118kN/m ² were recorded	The shear strength values obtained for the natural clay deposits are indicative of medium strength and high strength strata

4.3 Insitu MEXE Probe Tests

A series of MEXE probe tests were completed at several of the borehole locations (BHA to BHE) to provide a characteristic design CBR value for the initial natural clay deposits present below the site. The MEXE probe results provide a direct CBR value and are presented on the borehole record sheets attached in Appendix II. The results have identified, where new surfacing is to be constructed and where the initial natural clay deposits are used as an undisturbed subgrade (in their present condition) a mean CBR value of 4% can be adopted for design purposes, although soft spots may be present below some parts of the site. The CBR values for the areas investigated should improve under compaction and therefore higher CBR values may be achievable.

5.0 Laboratory Testing

5.1 Determination of Liquid & Plastic Limits

Three representative samples of the natural clay deposits recovered at the borehole locations (BH01 to BH03) were tested to determine their moisture content and liquid & plastic limits, to ascertain their volume change potential (shrinkage or swelling), to help assist with future foundation designs.

5.0 Laboratory Testing (Cont'd)

5.1 Determination of Liquid & Plastic Limits (Cont'd)

The results of the tests are contained in the Professional Soils Laboratory (PSL) Laboratory Report, report reference PSL23/4006 a copy of which can be seen attached in Appendix III. The natural clay deposits tested fall within the low and intermediate plasticity ranges, and when considering the amount passing the 425um sieve they display a low volume change (shrinkage or swelling) potential. Therefore, the natural clay deposits present below the site are unlikely to undergo significant changes in volume if large changes in their natural moisture content were to occur due to seasonal variations or the like, and as such if new foundations were to be based within the natural chalk deposits, they should be placed at a minimum depth of 0.75m below finished ground levels. Consideration should be given to the presence of existing, proposed or recently removed vegetation to avoid the effects of future shrinkage and swelling of the natural deposits, and as such minimum foundation depths may need to be increased to take this into account. Reference should be made to the NHBC Technical Standards guidance, Part 4.2 Building Near Trees, and BS5837:2012 – Trees in relation to design, demolition, and construction – Recommendations.

5.2 Determination of Chemical Attack on Buried Concrete

Ten representative samples of the made ground and natural clay deposits recovered at the borehole locations were tested by Derwentside Environmental Testing Services Limited (DETS) to determine their pH value and soluble sulphate (sulphate aqueous extract SO_4) levels, so these materials can be classified in accordance with the guidance BRE Special Digest 1:2005, Concrete in Aggressive Ground. The results of the tests are contained in the DETS Certificate of Analysis Report (references 23-11957), a copy of which can be seen attached in Appendix III. The laboratory test results have recorded soluble sulphate concentrations ranging between 15mg/l up to 220mg/l, and pH values ranging between 6.9 and 8.4. Therefore, for this proposed development site and where future foundations and buried concrete are to be constructed the soils should be classified as Design Sulphate Class of DS-1. The Aggressive Chemical Environment for Concrete (ACEC) class should be assessed as AC-1.

5.3 Contamination Screening / Screening Strategy

Whilst no change of end-use has been proposed, for completeness three representative samples of the shallow made ground deposits encountered at the borehole locations were screened for a wide range of chemical analytes to determine the levels of contamination present, and to allow an assessment of the risks these materials may pose to the future site end-users and construction workforce.

5.0 Laboratory Testing (Cont'd)

5.3 Contamination Screening / Screening Strategy (Cont'd)

Ground contamination laboratory testing was completed by DETS of Consett, Co. Durham (UKAS & MCERTS accredited), and the suite of chemical analysis carried out is summarised below. The results of the tests are contained in the DETS Certificate of Analysis Report (reference 23-11957) a copy of which can be seen attached in Appendix III, and a summary of the contamination results can be seen in the Tables on the following pages.

- ▼ 3 no. soil samples tested for Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide (free) and Total Organic Carbon (TOC)
- ▼ 3 no. soil samples screened for Speciated Polycyclic Aromatic Hydrocarbons (PAH's) – based on the current USEPA 16 PAH's
- ▼ 3 no. soil samples tested for Asbestos (presence)

A Human Health Generic Quantitative Risk Assessment (GQRA) is carried out by comparing measured concentrations in soil with generic screening values appropriate for the Conceptual Model and pollutant linkage(s) being assessed.

Provided the measured concentrations are below appropriate generic screening criteria, the risk from the pollutant linkages(s) being assessed are unlikely to represent a significant risk. The generic screening values referred to above usually take the form of risk-based Generic Assessment Criteria (GAC) values, that are most typically derived using the Environment Agency's Contaminated Land Exposure Assessment (CLEA) Model.

For the purpose of this Human Health contamination risk assessment, and when considering the nature and sensitivity of the proposed development Public Park (POS_{PARK}) end-use, the results have been compared against currently available assessment values published by LQM / CIEH (Suitable 4 Use Levels – S4UL's), CL:AIRE Category 4 Screening Levels (C4SL's) and Atkins ATRISKsoil Soil Screening Values (SSVs) for Cyanide only.

To allow an assessment of the level of risk to be made, the soils present on this site has been assessed by comparing the maximum recorded value against the appropriate critical concentration.

PHASE II GROUND INVESTIGATION REPORT

5.0 Laboratory Testing (Cont'd)

5.3 Contamination Screening / Screening Strategy (Cont'd)

Analyte	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Arsenic	170 ⁽¹⁾	3	18
Cadmium	532 ⁽¹⁾	3	0.3
Chromium III	33000 ⁽¹⁾	3	19
Chromium VI	220 ⁽¹⁾	3	<1.0
Copper	44000 ⁽¹⁾	3	63
Lead	1300 ⁽³⁾	3	81
Mercury	240 ⁽¹⁾	3	<0.05
Nickel	3400 ⁽¹⁾	3	18
Selenium	1800 ⁽¹⁾	3	<0.5
Zinc	170000 ⁽¹⁾	3	140
Cyanide	34 ⁽²⁾	3	0.2
Asbestos	Presence	3	None detected
Speciated PAH's			
Acenaphthene	29000 ⁽¹⁾	3	1.6
Acenaphthylene	29000 ⁽¹⁾	3	0.4
Anthracene	150000 ⁽¹⁾	3	5.8
Benzo(a)anthracene	49 ⁽¹⁾	3	8.1
Benzo(a)pyrene	11 ⁽¹⁾	3	6.4
Benzo(b)fluoranthene	13 ⁽¹⁾	3	5.1
Benzo(ghi)perylene	1400 ⁽¹⁾	3	3.6
Benzo(k)fluoranthene	370 ⁽¹⁾	3	3.4
Chrysene	93 ⁽¹⁾	3	7.8
Dibenz(a,h)anthracene	1.1 ⁽¹⁾	3	0.7
Fluoranthene	6300 ⁽¹⁾	3	21

⁽¹⁾ = The LQM/CIEH Suitable 4 Use Levels (Public Park, POS_{PARK} end-use, 1% SOM) [GEOL S4UL3816](#), ⁽²⁾ = ATRISK^{SOIL} SSV (2015), ⁽³⁾ = CL:AIRE C4SLs (Public Park, POS_{PARK} end-use)

PHASE II GROUND INVESTIGATION REPORT

5.0 Laboratory Testing (Cont'd)

5.3 Contamination Screening / Screening Strategy (Cont'd)

Speciated PAH's	Critical concentration (mg/kg)	No. of samples screened	Max. concentration recorded (mg/kg)
Fluorene	20000 ⁽¹⁾	3	2.5
Indeno(123cd)pyrene	150 ⁽¹⁾	3	3.7
Naphthalene	1200 ⁽¹⁾	3	0.2
Phenanthrene	6200 ⁽¹⁾	3	19
Pyrene	15000 ⁽¹⁾	3	15

⁽¹⁾ = The LQM/CIEH Suitable 4 Use Levels (Public Park, POS_{PARK} end-use, 1% SOM) [GEOL S4UL3816](#), ⁽²⁾ = ATRISK^{SOIL} SSV (2015), ⁽³⁾ = CL:AIRE C4SLs (Public Park, POS_{PARK} end-use)

None of the maximum concentration values for the metals or organic contaminants (individual PAH's) listed in the Tables above and on the previous page exceed the critical concentration values adopted for this site, based on a Public Park (POS_{PARK}) end-use. Therefore, the shallow soil deposits can remain on site without representing an unacceptable risk towards the site end-users where exposure pathways will be available post completion of the proposed development, and as a result no remediation works or measures are required.

6.0 Recommendation for New Building Foundations

Based on the ground conditions encountered at the borehole locations, shallow conventional strip or pad foundations will be acceptable for the proposed Youth Club building, based wholly within the natural clay deposits identified below the site at depths ranging between 0.30m and 4.40m below existing site levels at the location of BH01 to BH03 where a maximum allowable bearing pressure of 120kN/m² will be available.

Where the natural clay deposits are to be used as an undisturbed subgrade a design CBR value of 4% can be used for the construction of new paving and hardstanding.

It would be prudent to make an allowance for all foundation excavations to be inspected by a suitably qualified Geotechnical Engineer during the construction phase of works, to verify the correct founding strata and depths have been achieved, and to ensure there are no significant changes or variations in the ground conditions below parts of the site where boreholes were not sunk.

7.0 General Comments

For future site works, adequate lateral trench support will be required for excavations, to prevent trench wall collapse or over excavations, as well as to create a safe working environment below a depth of 1.20m, and any excavations on this site should remain open for as short a period as possible, since some of these materials may be susceptible to deterioration, if left open to the natural elements for any significant period of time.

It is also recommended for any new developments, adequate surface drainage should be designed and installed by a competent contractor, in order to prevent surface water 'ponding' or collection, during and post construction, particularly where the existing surface drainage system is disrupted or damaged.

In addition, for deeper excavations, drainage, service runs or the like that may pass close to or beneath any proposed new foundations, these should be undertaken with care and completed prior to the preparation of any new foundations, so as not to allow any loose or granular material to move or 'flow', thus causing settlement to occur to any new foundations based at a higher level.

It should be noted that there is always the possibility of variation in the ground conditions around and between the borehole locations. Therefore, during the ground preparation works and development of the site, should the ground conditions appear to differ from those identified as part of these investigation works, then advice should be sought from a suitably qualified Engineer to determine if a reassessment of the ground conditions and recommendations are required before the development works progress further.

End of Report

APPENDIX I

Site Location Plan & Proposed Development Layout Plan



Tectonic House
Unit 11, Queens Court North
Third Avenue, Team Valley Trading Estate
Gateshead, Tyne and Wear
NE11 0BU
Tel: 0191 477 2020
Email: enquiries@geolconsultants.co.uk



SITE LOCATION PLAN

Report Type: Phase II Ground Investigation Report

Site Address: Outreach Community Hub, Station Road, Shotton Colliery, Co. Durham, DH6 2JL

Project No.: GEOL23-7823



General Note :

1. OVERFLOW CAR PARK IN GRASSCRETE OR EQUIVALENT INCLUDING REMOVAL OF 2 NO EXISTING TREES
2. FORM OPENING IN EXISTING HEDGE/RAILING
3. 6 NEW BAYS AT OPENING IN TARMAC
4. 1500 HIGH GALVANISED RAILINGS TO MATCH EXISTING
5. RESURFACING EXISTING CAR PARK AND REPAINTING WHITE LINES
6. CREATE NEW BUS LAYBY TO HIGHWAYS REQUIREMENTS WITH NEW FOOTWAY, HEDGE AND RAILINGS TO MATCH EXISTING.
7. RESURFACING EXISTING ROAD UP TO THE SITE AND BUNGALOW AND CIRCULAR ROAD
8. SUPPLY AND INSTALL NEW TIMBER KNEE RAIL FENCING
9. REPLACE 10 NO EXISTING STREET LAMPS - TYPE TBC
10. NEW TARMAC PARKING AND DROP-OFF AREA WITH DROPPED-KERB FOR WHEELCHAIR ACCESS
11. NEW TARMAC PATHS AROUND BUILDING
12. MARSHALLS BUFF TEXTURED PAVING SLABS. SURROUNDING GRASSSED AREA GRADED UP TO PAVING LEVEL
13. REPOSITION EXISTING FLOOD LIGHT COLUMN
14. NEW BIN STORE. CONCRETE BASE. 2m HIGH WELDED STEEL MESH ENCLOSURE
15. ASSUME RAINWATER DRAINAGE TO CONNECT TO EXISTING DRAINAGE AND SOAKAWAYS - TBC

External Works Plan

1 : 250 @A1

External Works

Project Information
Outreach Community Hub Shotton
Outreach Community Hub Shotton

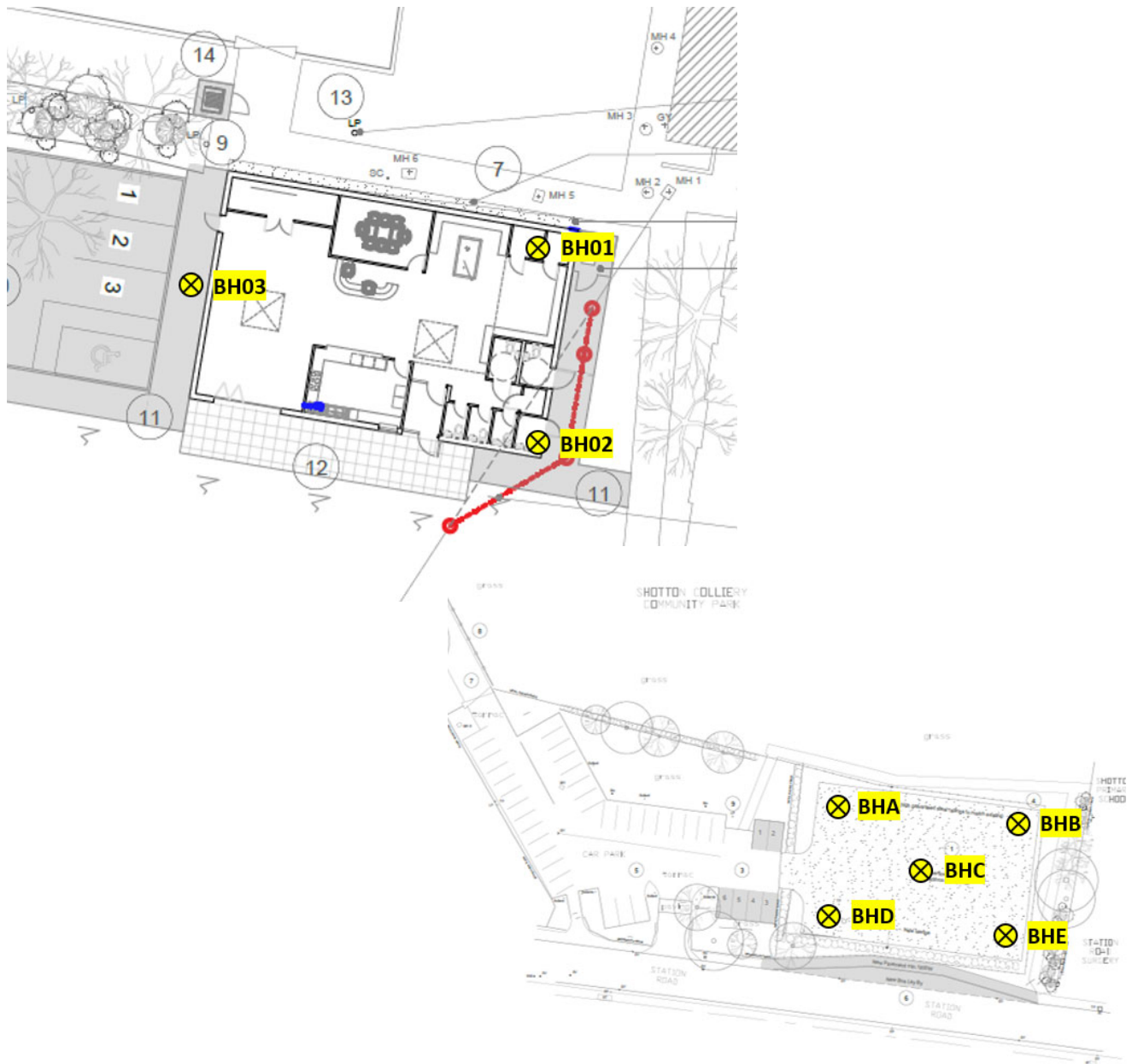
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Project No.	Drawn	Scale	Rev	Issue	Drawn
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APPENDIX II

Borehole Location Plan & Borehole Record Sheets



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BOREHOLE LOCATION PLAN



Report Type: Phase II Ground Investigation Report

Site Address: Outreach Community Hub, Station Road, Shotton Colliery, Co. Durham, DH6 2JL

Project No.: GEOL23-7823



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BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BH01	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.20-0.40	ES					(0.40) 0.40	Dark brown slightly gravelly sand with fragments of brick and sandstone (MADE GROUND).		
0.80-1.00 0.90 1.00-1.45	B HSVT SPT	83kN/m ² N=14				(1.60) 2.00	Stiff (high strength) light brown and grey mottled slightly sandy slightly gravelly CLAY with occasional cobbles (DEVENSIAN TILL).		
1.80-2.00 1.90 2.00-2.45	B HSVT SPT	104kN/m ² N=36				(1.45) 3.45	Stiff (high strength) dark brown and grey mottled slightly sandy slightly gravelly CLAY with occasional cobbles (DEVENSIAN TILL).		
2.80-3.00 2.90 3.00-3.45	B HSVT SPT	118kN/m ² N=29					Borehole terminated at 3.45m.		

Windowless Sampling Drilling Progress					GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks	
All dimensions in metres Scale 1:31.25					Client D3 Associates
Method/ Plant Used					Competitor Dart Rig
Logged By					WH

GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23



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BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BH02	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.20-0.30	ES					(0.40) 0.40	Dark brown slightly gravelly sand with fragments of brick and sandstone (MADE GROUND).		
0.80-1.00 0.90 1.00-1.45	B HSVT SPT	78kN/m ² N=15					Stiff (high strength) medium brown and light brown sandy slightly gravelly CLAY with occasional cobbles (DEVENSIAN TILL).		
1.80-2.00 1.90 2.00-2.45	B HSVT SPT	90kN/m ² N=33				(3.05)			
2.80-3.00 2.90 3.00-3.45	B HSVT SPT	80kN/m ² N=30				3.45			
							Borehole terminated at 3.45m.		

Windowless Sampling Drilling Progress					GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks	

WATER: Borehole remained dry.

ADDITIONAL: All positions are CAT scanned prior to breaking ground.

All dimensions in metres Scale 1:31.25	Client D3 Associates	Method/ Plant Used Competitor Dart Rig	Logged By WH
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GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23



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BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BH03	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10-0.30	ES					(0.30) 0.30	Dark brown slightly gravelly sand with fragments of brick and sandstone. Occasional rootlets noted (MADE GROUND).		
0.80-1.00 0.90 1.00-1.45	B HSVT SPT	88kN/m ² N=12				(0.95) 1.25	Stiff (high strength) light brown orange and grey mottled slightly sandy slightly gravelly CLAY (DEVENSIAN TILL).		
1.80-2.00 1.90 2.00-2.45	B HSVT SPT	68kN/m ² N=28				(3.20)	Firm (medium strength) becoming stiff (high strength) dark brown sandy gravelly CLAY with occasional cobbles (DEVENSIAN TILL).		
2.80-3.00 2.90 3.00-3.45	B HSVT SPT	100kN/m ² N=22	↓			4.45	Borehole terminated at 4.45m.		
4.00-4.45	SPT	N=27							

Windowless Sampling Drilling Progress					GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks	
All dimensions in metres Scale 1:31.25					WATER: Ingress of water recorded at 2.90m. ADDITIONAL: All positions are CAT scanned prior to breaking ground.
Client D3 Associates			Method/ Plant Used Competitor Dart Rig		Logged By WH

GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23



BOREHOLE LOG

Project				BOREHOLE No BHA
Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()	
Contractor Geol Consultants Limited				Sheet 1 of 1

[illegible]

Windowless Sampling Drilling Progress						GENERAL REMARKS	
Depth	Casing	Diameter	Recovery	Remarks		<p>WATER: Borehole remained dry.</p> <p>ADDITIONAL: All positions are CAT scanned prior to breaking ground.</p>	
All dimensions in metres Scale 1:31.25		Client D3 Associates			Method/ Plant Used Competitor Dart Rig		Logged By WH





GEOLOGICAL WORK LOG BH LOGS, GPJ GINT STD AGS 3 1.GDT 2/7/23



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BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BHB	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION		
0.10-0.20	B	5%				(0.30) 0.30	Grass overlying dark brown slightly sandy slightly gravelly clay with rootlets and fragments of brick (MADE GROUND).		
0.40	CBR					(0.70)	Firm dark brown and grey slightly sandy slightly gravelly CLAY with fragments of sandstone (DEVENSIAN TILL).		
0.70-0.80	B					1.00			
Borehole terminated at 1.00m.									

Windowless Sampling Drilling Progress					GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks	
All dimensions in metres Scale 1:31.25					Client D3 Associates
					Method/ Plant Used Competitor Dart Rig
					Logged By WH

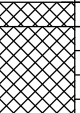

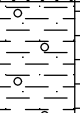

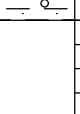

GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23



Geol Consultants Limited
Tectonic House, Unit 11
Queens Court North, Third Avenue
Team Valley Trading Estate
Gateshead
Tyne and Wear, NE11 0BU
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BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BHC	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.20-0.30	B	4%				0.10 (0.36)	Grass overlying dark brown slightly sandy slightly gravelly clay with rootlets and fragments of brick (MADE GROUND).		
0.40	CBR					0.46 (0.54)	Dark brown and black slightly clayey sandy gravel with fragments of brick (MADE GROUND).		
0.80-0.90	B					1.00	Firm light brown mottled orange slightly sandy slightly gravelly CLAY with fragments of sandstone (DEVENSIAN TILL)		
							Borehole terminated at 1.00m.		

Windowless Sampling Drilling Progress					GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks	
All dimensions in metres Scale 1:31.25					Client D3 Associates
					Method/ Plant Used Competitor Dart Rig
					Logged By WH

GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23




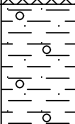
WATER: Borehole remained dry.

ADDITIONAL: All positions are CAT scanned prior to breaking ground.



BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BHD
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()	
Contractor Geol Consultants Limited				Sheet 1 of 1

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.00-0.10	B	5%				0.15	Grass overlying dark brown slightly sandy slightly gravelly clay with rootlets and fragments of brick (MADE GROUND).		
0.30-0.40	B					(0.35) 0.50	Dark brown and black slightly clayey sandy gravel with fragments of brick (MADE GROUND).		
0.70-0.80 0.70	B CBR					(0.50) 1.00	Firm dark brown and grey slightly sandy slightly gravelly CLAY with fragments of sandstone (DEVENSIAN TILL).		
							Borehole terminated at 1.00m.		

Windowless Sampling Drilling Progress						GENERAL REMARKS	
Depth	Casing	Diameter	Recovery	Remarks		WATER: Borehole remained dry. ADDITIONAL: All positions are CAT scanned prior to breaking ground.	
All dimensions in metres Scale 1:31.25			Client D3 Associates		Method/ Plant Used Competitor Dart Rig		Logged By WH

GEOLOGICAL WORKING BUREAU OF THE UNITED STATES GEOLOGICAL SURVEY
 GEOL. WS LOG BH LOGS.GPJ GINT STD AGS 3 1.GDT 2/7/23



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Tyne and Wear, NE11 0BU
0191 477 2020
enquiries@geolconsultants.co.uk

BOREHOLE LOG

Project Outreach Community Hub, Station Road, Shotton Colliery, County Durham, DH6 2JL				BOREHOLE No BHE	
Job No GEOL23-7823	Date 17-05-23 17-05-23	Ground Level (m)	Co-Ordinates ()		
Contractor Geol Consultants Limited				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.30-0.40	B					0.20	Grass overlying dark brown slightly sandy slightly gravelly clay with rootlets and fragments of brick (MADE GROUND).		
						(0.30) 0.50	Dark brown sandy gravel with fragments of brick and concrete (MADE GROUND).		
0.60-0.70 0.60	B CBR	3%				(0.50) 1.00	Firm dark brown and grey slightly sandy slightly gravelly CLAY with fragments of sandstone (DEVENSIAN TILL).		
Borehole terminated at 1.00m.									

Windowless Sampling Drilling Progress						GENERAL REMARKS
Depth	Casing	Diameter	Recovery	Remarks		
						WATER: Borehole remained dry. ADDITIONAL: All positions are CAT scanned prior to breaking ground.
All dimensions in metres Scale 1:31.25			Client D3 Associates		Method/ Plant Used Competitor Dart Rig	Logged By WH

GEOL WS LOG BH LOGS.GPJ GINT STD AGS 3.1 GDT 2/7/23

APPENDIX III

Laboratory Testing Results



LABORATORY REPORT



Contract Number: PSL23/4006

Report Date: 08 June 2023

Client's Reference: GEOL23-7823

Client Name: Geol Consultants Ltd
Tectonic House, Unit 11 Queens Court North
Third Avenue
Team Valley Trading Estate
Gateshead
NE11 0BU

For the attention of: William Howells

Contract Title: Outreach Community Hub, Station Road, Shotton Colliery, County Durham,
DH6 2JL

Date Received: 25/5/2023

Date Commenced: 25/5/2023

Date Completed: 08/06/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


M Fennell
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
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Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043



PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY

**Outreach Community Hub, Station Road, Shotton Colliery,
County Durham, DH6 2JL**

Contract No:

PSL23/4006

Client Ref:**GEOL23-7823**

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



**Outreach Community Hub, Station Road, Shotton Colliery,
County Durham, DE6 2JL**

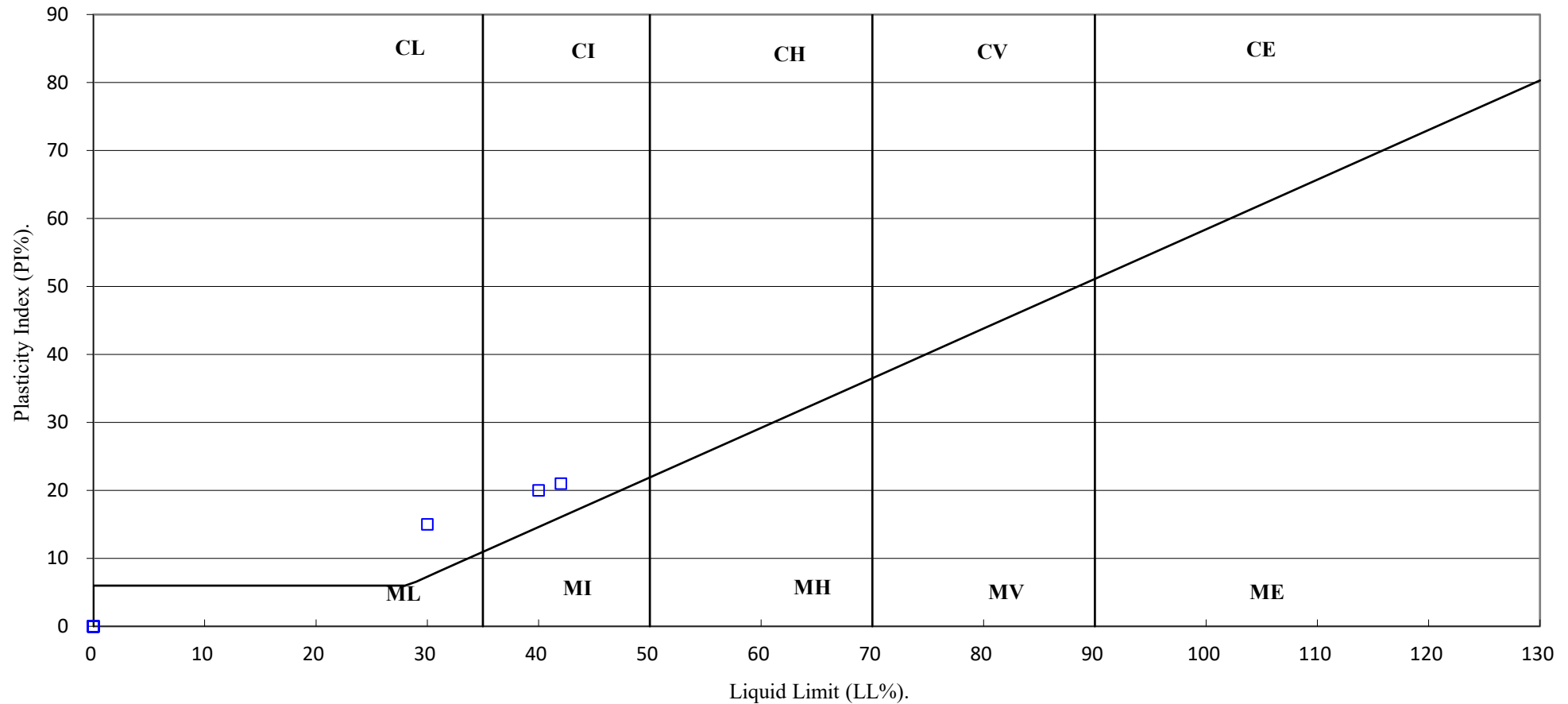
Contract No:

PSL23/4006

Client Ref:

GEOL23-7823

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Outreach Community Hub, Station Road, Shotton Colliery,
County Durham, DE6 2JL

Contract No:

PSL23/4006

Client Ref:

GEOL23-7823



Certificate of Analysis

Certificate Number 23-11957

Issued: 31-May-23

Client Geol-Consultants Ltd.
Tectonic House
Unit 11 Queens Court North
Third Avenue
Team Valley Trading Estate
Gateshead, Tyne & Wear
NE11 0BU

Our Reference 23-11957

Client Reference GEOL20-9468

Order No GEOL23-7823

Contract Title Outreach Community Hub, Station Road, Shotton Colliery, DH6 2

Description 10 Soil samples.

Date Received 22-May-23

Date Started 22-May-23

Date Completed 31-May-23

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

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

Approved By

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 23-11957

Client Ref GEOL20-9468

Contract Title Outreach Community Hub, Station Road, Shotton Colliery, DH6 2JL

Lab No	2174559	2174560	2174561	2174562	2174563	2174564
Sample ID	BH01	BH01	BH02	BH02	BH03	BH03
Depth	0.20-0.40	1.80-2.00	0.20-0.30	0.80-1.00	0.10-0.30	1.80-2.00
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	17/05/2023	17/05/2023	17/05/2023	17/05/2023	17/05/2023	17/05/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%	15		13		17	
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	3.7		4.4		18	
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1		0.2		0.3	
Chromium	DETSC 2301#	0.15	mg/kg	12		7.4		19	
Chromium III	DETSC 2301*	0.15	mg/kg	12		7.4		19	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	12		10		63	
Lead	DETSC 2301#	0.3	mg/kg	13		24		81	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05		< 0.05	
Nickel	DETSC 2301#	1	mg/kg	15		5.5		18	
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5		< 0.5		< 0.5	
Zinc	DETSC 2301#	1	mg/kg	45		85		140	
Inorganics									
pH	DETSC 2008#		pH	8.4	7.9	8.3	8.3	8.0	8.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		0.2		0.1	
Total Organic Carbon	DETSC 2084#	0.5	%	1.1		3.1		8.7	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	21	34	35	15	19	16
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1		0.2	
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1		0.4	
Acenaphthene	DETSC 3301	0.1	mg/kg	0.3		< 0.1		1.6	
Fluorene	DETSC 3301	0.1	mg/kg	0.4		< 0.1		2.5	
Phenanthrene	DETSC 3301	0.1	mg/kg	3.3		0.2		19	
Anthracene	DETSC 3301	0.1	mg/kg	1.1		< 0.1		5.8	
Fluoranthene	DETSC 3301	0.1	mg/kg	6.6		0.4		21	
Pyrene	DETSC 3301	0.1	mg/kg	5.1		0.3		15	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	3.4		< 0.1		8.1	
Chrysene	DETSC 3301	0.1	mg/kg	3.5		< 0.1		7.8	
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	2.2		< 0.1		5.1	
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	1.4		< 0.1		3.4	
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	2.7		< 0.1		6.4	
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.6		< 0.1		3.7	
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.4		< 0.1		0.7	
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.8		< 0.1		3.6	
PAH 16 Total	DETSC 3301	1.6	mg/kg	34		< 1.6		100	

Summary of Chemical Analysis

Soil Samples

Our Ref 23-11957

Client Ref GEOL20-9468

Contract Title Outreach Community Hub, Station Road, Shotton C

Lab No	2174565	2174566	2174567	2174568
Sample ID	BHB	BHC	BHD	BHE
Depth	0.10-0.20	0.20-0.30	0.00-0.10	0.30-0.40
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	17/05/2023	17/05/2023	17/05/2023	17/05/2023
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004	0.1	%				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg				
Cadmium	DETSC 2301#	0.1	mg/kg				
Chromium	DETSC 2301#	0.15	mg/kg				
Chromium III	DETSC 2301*	0.15	mg/kg				
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				
Copper	DETSC 2301#	0.2	mg/kg				
Lead	DETSC 2301#	0.3	mg/kg				
Mercury	DETSC 2325#	0.05	mg/kg				
Nickel	DETSC 2301#	1	mg/kg				
Selenium	DETSC 2301#	0.5	mg/kg				
Zinc	DETSC 2301#	1	mg/kg				
Inorganics							
pH	DETSC 2008#		pH	7.6	8.2	6.9	8.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg				
Total Organic Carbon	DETSC 2084#	0.5	%				
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	20	82	23	220
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg				
Acenaphthylene	DETSC 3301	0.1	mg/kg				
Acenaphthene	DETSC 3301	0.1	mg/kg				
Fluorene	DETSC 3301	0.1	mg/kg				
Phenanthrene	DETSC 3301	0.1	mg/kg				
Anthracene	DETSC 3301	0.1	mg/kg				
Fluoranthene	DETSC 3301	0.1	mg/kg				
Pyrene	DETSC 3301	0.1	mg/kg				
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg				
Chrysene	DETSC 3301	0.1	mg/kg				
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg				
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg				
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg				
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg				
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg				
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg				
PAH 16 Total	DETSC 3301	1.6	mg/kg				

Summary of Asbestos Analysis Soil Samples

Our Ref 23-11957

Client Ref GEOL20-9468

Contract Title Outreach Community Hub, Station Road, Shotton Colliery, DH6 2JL

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2174559	BH01 0.20-0.40	SOIL	NAD	none	Michael Kay
2174561	BH02 0.20-0.30	SOIL	NAD	none	Michael Kay
2174563	BH03 0.10-0.30	SOIL	NAD	none	Michael Kay

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

Information in Support of the Analytical Results

Our Ref 23-11957
 Client Ref GEOL20-9468
 Contract Outreach Community Hub, Station Road, Shotton Colliery, DH6 2JL

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2174559	BH01 0.20-0.40 SOIL	17/05/23	GJ 250ml, PT 1L		
2174560	BH01 1.80-2.00 SOIL	17/05/23	PG		
2174561	BH02 0.20-0.30 SOIL	17/05/23	GJ 250ml, PT 1L		
2174562	BH02 0.80-1.00 SOIL	17/05/23	PG		
2174563	BH03 0.10-0.30 SOIL	17/05/23	GJ 250ml, PT 1L		
2174564	BH03 1.80-2.00 SOIL	17/05/23	PG		
2174565	BHB 0.10-0.20 SOIL	17/05/23	PG		
2174566	BHC 0.20-0.30 SOIL	17/05/23	PG		
2174567	BHD 0.00-0.10 SOIL	17/05/23	PG		
2174568	BHE 0.30-0.40 SOIL	17/05/23	PG		

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

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

Soil Analysis Notes

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

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

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

Disposal

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

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

End of Report