

Ground Investigation



www.geotechnics.co.uk



Whitworth Community High School, Rochdale

Factual Report

for
Campbell Reith LLP

Project Number PN204160

February 2021

Issuing Office North West Office
The Geotechnical Centre
Unit 1, Borders Industrial Park
River Lane, Saltney
Chester
CH4 8RJ
Tel: 01244 671117
mail@chester.geotechnics.co.uk

Head Office
The Geotechnical Centre
203 Torrington Avenue
Tile Hill
Coventry
CV4 9UT
Tel: 02476 694664
mail@geotechnics.co.uk

South West Office
The Geotechnical Centre
Unit 5, Orchard Court
Heron Road, Sowton
Exeter
EX2 7NR
Tel: 01392 463110
mail@exeter.geotechnics.co.uk

North East Office
The Geotechnical Centre
Unit 1, Bypass Park Estate
Sherburn-in-Elmet
Leeds
LS25 6EP
Tel: 01977 525030
mail@yorkshire.geotechnics.co.uk

Ground Investigation
at

Factual Report

**Whitworth Community High School,
Rochdale**
for
Campbell Reith LLP

Project No:
PN204160
February 2021

LIST OF CONTENTS

	Page No
1.0 INTRODUCTION	1
2.0 OBJECT AND SCOPE OF THE INVESTIGATION	1
3.0 PRESENTATION	1
4.0 THE SITE	1
4.1 Location	1
4.2 Description	1
4.3 Site Geology	1
4.4 Hydrogeology	2
5.0 PROCEDURE	2
5.1 Commissioning	2
5.2 General	2
5.3 Dynamic Sample Boreholes	2
5.4 Instrumentation and Monitoring	3
6.0 LABORATORY TESTING	3
6.1 Geotechnical	3
6.2 Contamination	4

APPENDICES

APPENDIX 1	Site Location Plan
APPENDIX 2	Dynamic Sample Borehole Records and SPT Results Summary Sheets
APPENDIX 3	Monitoring Results
APPENDIX 4	Laboratory Test Results - Geotechnical
APPENDIX 5	Laboratory Test Results - Contamination (Soil)
APPENDIX 6	Laboratory Test Results - Contamination (Groundwater)
APPENDIX 7	Exploratory Hole Location Plan
APPENDIX 8	Investigation Techniques and General Notes

1.0 INTRODUCTION

A geotechnical and geo-environmental investigation was undertaken by Geotechnics Limited at the site of proposed redevelopment works at the existing Whitworth Community High School in Rochdale, Lancashire. The investigation was carried out to the instructions of the Client, Campbell Reith LLP. This report describes the work undertaken and presents the data obtained.

2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The investigation comprised dynamic sample boreholes, in situ and laboratory testing and reporting. A Factual Report was also commissioned.

3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 7 of this report. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 8 to aid an understanding of the procedures followed and the context in which the report should be read.

In addition, data in electronic format in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format) are presented separately.

4.0 THE SITE

4.1 Location

The site is situated within the grounds of Whitworth Community High School, off Hall Street, located approximately 4.5km north of Rochdale town centre. The approximate Ordnance Survey National Grid Reference for the centre of the site is SD 880 179 and an extract from the relevant 1:50,000 Scale O.S. Map is included as Appendix 1.

4.2 Description

The site comprises a roughly rectangular area measuring approximately 160m from north to south and approximately 90m from east to west, situated immediately east of the existing main school building.

The area is currently occupied by a school building (noted as the *existing science block*), an area of hardstanding used as an additional car park and a part of the playing fields and hardstanding play area.

The site generally falls in level to the east, however, certain parts of the site (notably the playing fields and hardstanding courts) have been constructed at a higher elevation on terraces which are supported by retaining walls.

The site is accessed from the south via the school's main access road leading from Hall Street.

4.3 Site Geology

The British Geological Survey website, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> accessed on 13th January 2021, shows the site to be underlain by Till, consisting of *clay, silt, sand, gravel and cobbles* of Quaternary age.

The superficial deposits are underlain by rock strata of the Rossendale Formation, a member of the Millstone Grit Group, of Carboniferous age.

Collectively, the Rossendale Formation rocks are typically described as *fine to very coarse grained, pebbly, feldspathic sandstone, interbedded with grey siltstone and mudstone*.

Made Ground is not noted on or adjacent to the site on the website consulted. However, Made Ground may be present on site for which the BGS have no records or are too shallow for incorporation into the current maps or website.

4.4 Hydrogeology

The DEFRA Magic Map website, <https://magic.defra.gov.uk/MagicMap.aspx>, accessed on 13th January 2021, indicates the Glacial Till to be classified as a *Secondary (undifferentiated) Aquifer*. The underlying Rossendale Formation is indicated to be a *Secondary A aquifer*.

5.0 PROCEDURE

5.1 Commissioning

The work was awarded following submission of a tender for work designed by the Client for ground investigation of the site in accordance with their requirements.

5.2 General

The procedures followed in this site investigation are based on *BS 5930: 2015+ A1:2020 – Code of Practice for Site Investigations* and *BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites*. The soils and rocks encountered have been described in accordance with *BS5930:2015 + A1:2020* and *BS EN ISO 14688-1:2018* and *BS EN ISO 14689:2018*.

The Exploratory Hole locations were specified by the Client and their locations are shown on the Exploratory Hole Location Plan in Appendix 7. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a Leica GPS survey device. The depths quoted on the exploratory hole records are in metres below ground level.

A Ground Penetrating Radar (GPR) survey of the site was commissioned by the Client prior to the investigation to determine the location of any buried services.

Prior to the commencement of the intrusive investigative works, available plans and records of buried services were checked and each exploratory hole location was scanned using a Cable Avoidance Tool (CAT) and Signal Generator (Genny) to check for the presence of any underground services.

Additionally, an inspection pit was excavated at each borehole location using hand tools to a depth of 1.20m below ground level to check for the presence of underground services.

5.3 Dynamic Sample Boreholes

Eleven (11 No.) Dynamic Sample Boreholes (numbered WS01 to WS09, WS09A and WS10) were undertaken to depths ranging between 3.00m and 5.45m below ground level. The work was carried out between 27th and 29th October 2020.

N.B. Boreholes WS07 and WS09A were terminated within the service inspection pits under instruction of the Client. WS07 was terminated at 0.80m below ground level due to groundwater inflow within the inspection pit; WS09A was terminated at 1.10m below ground level upon encountering a clayware drain.

Samples were taken from the service inspection pit, where appropriate, for laboratory examination and analysis. The dynamic samples were taken using the super-heavy Dynamic Probe apparatus which drives lined steel tubes into the ground in 1m lengths. Samples were retrieved in the plastic liners which were subsequently split and the recovered soils described before being sub-sampled into ES, D and B samples as shown on the Dynamic Sample Borehole Records, presented in Appendix 2. The holes were not cased and progress depended on the nature of the strata penetrated.

Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with *BS EN ISO 22476-3:2005+A1:2011* to obtain a measure of the engineering properties of the proved strata. Full details of the SPT results are summarised on the SPT Results Summary Sheets included with the borehole records.

Groundwater observations are included on the borehole records, where appropriate, and any rise in water level was recorded over 20 minutes whilst drilling operations were suspended.

On completion, standpipes were installed in Boreholes WS02, WS03, WS05, WS08 and WS10 (see Section 5.4). The other boreholes were backfilled with bentonite pellets and reinstated with arisings.

5.4 Instrumentation and Monitoring

Long-term monitoring of the gas and groundwater levels was made possible by the installation of standpipes as follows:

Exploratory Hole	Standpipe Slotted Pipe & Filter Zone (m)
WS02	1.00m to 4.00m
WS03	1.00m to 4.00m
WS05	0.50m to 2.50m
WS08	1.50m to 4.00m
WS10	1.00m to 3.00m

Monitoring of the gas and groundwater levels at the site commenced on 23rd November 2020 with further visits on 4th and 9th December 2020.

On each of the monitoring visits a record of the groundwater level in the standpipes was obtained. On 4th December 2020 where water was recorded, samples were obtained (where possible) following purging of three well volumes of water from the standpipes.

In addition to the groundwater levels, the following parameters were measured and recorded in each standpipe using a Gas Data GFM436 Gas Analyser and a Geotechnical Instruments GA5000 Gas Analyser:

- Concentrations (% Vol) of CH₄, O₂, CO₂, along with (ppm) H₂S, CO
- Flow Rate
- Barometric Pressure

The results of the monitoring are presented in Appendix 3.

6.0 LABORATORY TESTING

6.1 Geotechnical

The laboratory testing schedule was specified by the Client. Unless otherwise stated, the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365) and were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Test Certificate in Appendix 4. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

BS EN ISO 17892-1:2014

24 No. Water Content Determination

BS EN ISO 17892-4:2016

5 No. Particle Size Distribution Determination – Wet Sieving Method

5 No. Particle Size Distribution Determination – Pipette Method

BS EN ISO 17892-12:2018

7 No. Liquid and Plastic Limit Determination

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services (DETS) Limited (UKAS Accredited Laboratory, Number 2139).

BS 1377:1990

Test No. Test Description

Part 3

3 10 No. Organic Matter Content

BRE Special Digest I Suite

13 No. Suites comprising:-
Soluble Sulphate
pH

6.2 Contamination

Selected samples of soil and groundwater were tested at the laboratories of Derwentside Environmental Testing Services (DETS) Limited (UKAS Accredited Laboratory, Number 2139) and Element Materials Technology Limited (UKAS Accredited Laboratory, Number 4225) for a number of determinands in order to check on potential site contamination. The determinands were specified by the Client and are detailed on the results sheets in Appendices 5 (Soil) and 6 (Groundwater) together with the test results as well as the test methods, accreditation and detection limits.

Signed for and on behalf of Geotechnics Limited.

Prepared by:
Tom Birch Bsc (Hons), MSc, FGS
Senior Engineer

Reviewed by:
Aaron Field BSc (Hons), MSc, FGS
Senior Engineer

APPENDIX I

Site Location Plan

SITE LOCATION PLAN



© Crown Copyright Reserved, OS License Number: 100020449

Ground Investigation
at
Whitworth Community High School, Rochdale
for
Campbell Reith LLP

APPENDIX 2

Dynamic Sample Borehole Records and SPT Results Summary Sheets

DATA SHEET - Symbols and Abbreviations used on Records



Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecon Probe Test
PID	Photo Ionisation Detection (ppm)
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content (All other strengths from undrained triaxial testing)
S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/-(mm)	Total blows/penetration
()	Extrapolated value

Groundwater

Water Strike	
Depth Water Rose To	

Instrumentation

Seal	
Filter	
Seal	

Strata

Made Ground Granular	
Made Ground Cohesive	
Topsoil	
Cobbles and Boulders	
Gravel	
Sand	
Silt	
Clay	
Peat	

Note: Composite soil types shown by combined symbols

Chalk	
Limestone	
Sandstone	
Coal	

Strata, Continued

Mudstone	
Siltstone	
Metamorphic Rock	
Fine Grained	
Medium Grained	
Coarse Grained	
Igneous Rock	
Fine Grained	
Medium Grained	
Coarse Grained	

Backfill Materials

Arisings	
Bentonite Seal	
Concrete	
Fine Gravel Filter	
General Fill	
Gravel Filter	
Grout	
Sand Filter	
Tarmacadam	

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	
Fractures/metre	
FRACTURE SPACING (m)	Maximum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss
(where core recovery is unknown it is assumed to be at the base of the run)	

BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No WS01 PN204160
 Client CAMPBELL REITH LLP National Grid Coordinates 388131.2 E 417968.4 N Ground Level 224.69 m OD

Sampling			Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
0.00- 0.30	B					Grass over MADE GROUND: Firm friable dark brown slightly gravelly sandy clay with some rootlets. Gravel is angular to subangular fine to coarse of mudstone, limestone, sandstone, coal and concrete.	G.L.		224.69
0.20	ES						0.30		224.39
0.50	D					MADE GROUND: Firm dark grey mottled orangish brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of mudstone, sandstone, limestone, concrete and brick fragments.	0.70		223.99
0.50	ES								
0.70- 1.20	B								
1.00	ES					PROBABLE MADE GROUND: Firm friable brownish grey slightly sandy gravelly clay with a low subangular to subrounded cobble content of sandstone and limestone. Gravel is angular to subrounded fine to coarse of mudstone, sandstone and limestone.	1.50		223.19
1.20- 1.65	D (DRY)		TR= 100%	S10					
1.20- 2.00	B								
1.50- 2.00	B								
2.00- 3.00	B					Firm greyish brown slightly sandy slightly gravelly CLAY with frequent bands of silt and gravelly sand. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, limestone, quartzite and coal.			
2.00- 3.00	D (DRY)		TR= 80%	S10					
2.00- 2.45	B								
2.00	ES								
3.00- 4.00	B								
3.00- 4.00	D (DRY)		TR= 80%	S8					
3.00- 3.45	B								
4.00- 4.45	# (WET)					Below 4.00m, stiff.			
4.00- 5.00	B		TR= 50%	S24					
4.00- 5.00	B								
End of Borehole							5.00		219.69

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.			27/10/20	08:00	3.50					Seepage - no rise.
5.00	0.10	Dynamic Sampler	KD/DP KD/DP	5.00		3.50	27/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at 5.00m depth upon reaching scheduled depth. The engineer noted that the borehole collapsed back to 4.50m depth upon retrieval of the sampling barrel.
 Backfill details from base of hole: collapsed material up to 4.50m, bentonite seal up to 1.00m, arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021

BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No WS02 PN204160

Client CAMPBELL REITH LLP National Grid Coordinates 388126.6 E 417947.4 N Ground Level 224.73 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.00- 0.60	B					Grass over MADE GROUND: Firm friable dark brown slightly gravelly sandy clay with some rootlets. Gravel is angular to subangular fine to coarse of mudstone, sandstone, coal and brick fragments. Low subangular cobble content of concrete.	G.L.		224.73	
0.50	ES				0.60		224.13			
0.50	ES					PROBABLE MADE GROUND: Stiff friable brownish grey slightly sandy slightly gravelly clay with a low subangular to subrounded cobble content of sandstone and limestone. Gravel is angular to subangular fine to coarse of mudstone, sandstone and limestone.				
0.60- 1.20	B				1.20		223.53			
1.00	ES									
1.20- 2.00	B		TR= 100%	15	S4	Soft becoming firm greyish brown slightly gravelly sandy CLAY with frequent bands of gravelly sand. Gravel is angular to subangular fine to coarse of mudstone, sandstone, limestone, quartzite and coal.				
1.20 2.00	D	(DRY)								
1.20- 1.65	D	(DRY)								
2.00- 3.00	B		TR= 100%	12	S10					
2.00 3.00	D	(DRY)				Below 3.00m, stiff. Slightly sandy.				
2.00- 2.45	D	(DRY)								
2.00	ES									
3.00- 4.00	B		TR= 90%	14	S22	At 4.25m, cobble obstruction.				
3.00 4.00	D	(WET)								
3.00- 3.45	D	(WET)								
4.00- 4.25	D	(WET)			S50/95	End of Borehole	4.25		220.48	

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit	KD/DP	G.I.			27/10/20	08:00	3.00					Seepage - no rise.
4.25	0.10	Dynamic Sampler	KD/DP	4.25		3.00	27/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found. ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars. The Dynamic Sample Borehole was terminated at 4.25m depth due to the presence of an obstruction. A 50mm standpipe was installed to 4.00m with a geowrapped slotted section from 1.00m to 4.00m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.15m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet. All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
Figure 1 of 1
22/02/2021

BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No **WS03** PN204160
 Client CAMPBELL REITH LLP National Grid Coordinates 388116.4 E 417979.3 N Ground Level 225.15 m OD


Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.00- 0.50	B					Grass over MADE GROUND: Firm friable dark brown slightly sandy slightly gravelly clay with some rootlets. Gravel is angular to subangular fine to coarse of limestone, sandstone, mudstone, coal and concrete.	G.L.		225.15	
0.20	ES						0.50		224.65	
0.40	ES					PROBABLE MADE GROUND: Stiff friable brownish grey slightly sandy gravelly clay with a low angular to subangular cobble content of limestone and sandstone. Gravel is angular to subrounded fine to coarse of limestone, sandstone and mudstone.				
0.50- 1.20	B						1.30	223.85		
1.00	D			16		Firm becoming stiff greyish brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of limestone, siltstone, sandstone and coal. Locally grading to clayey silt. At 2.00m, locally very stiff. Occasional bands of gravelly medium to coarse sand.				
1.00	ES									
1.20- 1.65	D	(DRY)			S8					
1.20	2.00		TR= 100%							
1.30- 2.00	B									
2.00- 3.00	B		TR= 100%	14	S35					
2.00	3.00									
2.00- 2.45	D	(DRY)								
2.00	ES									
3.00- 4.00	B		TR= 90%	10	S24					
3.00	4.00									
3.00- 3.45	D	(DRY)								
4.00- 5.00	B		TR= 70%	14	S18					
4.00	5.00									
4.00- 4.45	D	(DRY)								
5.00- 5.45	D	(WET)		13	S14	At 5.00m, firm.				
End of Borehole							5.45		219.70	

Boring				Progress				Groundwater						
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.			27/10/20	08:00	5.45					Seepage - no rise.
5.45	0.10	Dynamic Sampler	KD/DP KD/DP	5.45		5.45	27/10/20	10:45						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at 5.45m depth upon reaching scheduled depth. A 50mm standpipe was installed to 4.00m with a geowrapped slotted section from 1.00m to 4.00m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 1.00m, bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021



BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL

Engineer CAMPBELL REITH LLP

Borehole Project No **WS04**
PN204160

Client CAMPBELL REITH LLP

National Grid Coordinates 388109.1 E
417954.7 N

Ground Level 225.69 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.10- 0.40	B					MADE GROUND: Black tarmacadam.	G.L. 0.10		225.69 225.59	
0.30	ES					MADE GROUND: Light brown slightly sandy angular to subangular medium to coarse gravel of limestone and dolomite (sub-base).	0.45		225.24	
0.50	B				0.60			225.09		
0.50	ES									
0.60- 1.00	B									
1.00	ES					MADE GROUND: Firm dark grey slightly sandy gravelly organic clay. Gravel is angular to subangular fine to coarse of limestone, coal and concrete.	1.20		224.49	
1.20- 1.65	D (DRY)		TR= 100%	11	S8	PROBABLE MADE GROUND: Stiff friable brownish grey slightly sandy gravelly clay. Gravel is angular to subrounded fine to coarse of mudstone, sandstone and limestone.	1.40		224.29	
1.20 2.00	D									
1.40- 2.00	B									
2.00- 3.00	B		TR= 70%		S16	Orangish brown gravelly slightly clayey medium to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone and quartzite.				
2.00 3.00	D (WET)					Stiff brown mottled orangish brown slightly gravelly sandy CLAY with frequent bands of gravelly sand. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, limestone and coal.				
2.00- 2.45	D									
2.00	ES									
3.00- 3.39	D (WET)				S50/ 235	At 3.39m, cobble obstruction.	3.39		222.30	
						End of Borehole				

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.			27/10/20	08:00	2.00					Seepage - no rise.
3.39	0.10	Dynamic Sampler	KD/DP KD/DP	3.39		2.00	27/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 The Dynamic Sample Borehole was terminated at 3.39m depth due to the presence of an obstruction.
 Backfill details from base of hole: bentonite seal up to 1.00m, arisings up to 0.25m, concrete up to 0.15m, tarmacadam up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021

BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No **WS05** PN204160

Client CAMPBELL REITH LLP National Grid Coordinates 388117.8 E 417925.0 N Ground Level 224.57 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.00- 0.15	B					Grass over TOPSOIL: Firm friable dark brown slightly gravelly sandy clay with many rootlets. Gravel is subangular medium to coarse of limestone.	G.L.		224.57	
0.20	ES						0.25		224.32	
0.50	D					MADE GROUND: Reddish grey sandy subangular medium to coarse gravel of limestone and dolomite. Below 0.40m, slightly clayey.	0.60		223.97	
0.50	ES									
0.60- 1.20	B					MADE GROUND: Soft dark greyish brown slightly sandy gravelly clay with a high subangular cobble content of limestone and brick. Gravel is angular to subangular fine to coarse of limestone, sandstone, concrete and brick fragments.	1.50		223.07	
1.00	ES									
1.20- 1.65	D	(WET)	TR= 60%		S6	PROBABLE MADE GROUND: Firm dark brown slightly gravelly sandy silty clay. Gravel is subrounded fine to coarse of sandstone, mudstone, limestone and coal.	2.40		222.17	
1.20 2.00	D									
1.50- 2.00	B					Firm to stiff brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of mudstone, limestone, sandstone and coal.				
2.00- 2.45	D	(WET)	TR= 90%		S10					
2.00 3.00	ES					Below 3.00m, frequent bands of sandy fine to coarse subangular gravel of sandstone, limestone and quartzite.				
2.20	D									
2.50- 3.00	B					S12				
3.00	ES		TR= 40%							
3.00 4.00	D	(WET)				S24				
3.00- 3.45	D									
3.20	D					S14				
3.80	D	(WET)	TR= 10%							
4.00- 4.45	D					End of Borehole				
4.00 5.00	D									
4.50	D									
5.00- 5.45	D	(WET)					5.45		219.12	

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit	KD/DP	G.I.			28/10/20	08:00	0.50					Seepage - no rise
5.45	0.10	Dynamic Sampler	KD/DP	5.45		0.20	28/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at 5.45m depth upon reaching scheduled depth. A standpipe was installed to 2.50m with a geowrapped slotted section from 0.50m to 2.50m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 2.50m, gravel filter up to 0.50m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021


BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No **WS06** PN204160
 Client CAMPBELL REITH LLP National Grid Coordinates 388120.9 E 417903.5 N Ground Level 224.77 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.10- 0.40	B					MADE GROUND: Black tarmacadam.	G.L.		224.77	
0.20	ES						0.10		224.67	
0.40- 0.90	B					MADE GROUND: Grey slightly sandy slightly clayey subangular fine to coarse gravel of limestone, sandstone, coal and concrete.	0.40		224.37	
0.50	ES									
0.90- 1.20	B					MADE GROUND: Light brown mottled grey slightly gravelly sandy clay. Gravel is subangular fine to coarse of limestone and sandstone.	0.90		223.87	
1.00	ES	(DRY)		13	S8					
1.20- 1.65	D									
1.20- 2.00	D		TR=	80%		PROBABLE MADE GROUND: Loose orangish brown gravelly slightly clayey medium sand. Gravel is angular to subangular fine to coarse of sandstone.	1.50		223.27	
1.50- 2.00	B									
2.00- 3.00	B					Firm brown slightly sandy slightly gravelly to gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and limestone.				
2.00- 3.00	D	(DRY)	TR=	100%	S8					
2.00- 2.45	D			16						
2.00	ES									
3.00- 4.00	B									
3.00- 4.00	D	(DRY)	TR=	60%	S12					
3.00- 3.45	D			8.3						
4.00- 4.33	D	(DRY)		9.5	S50/ 180	At 4.33m, cobble obstruction.				
						End of Borehole	4.33		220.44	

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.			28/10/20	08:00						None encountered.
4.33	0.10	Dynamic Sampler	KD/DP KD/DP	4.33		DRY	28/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found. Logged by DP
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars. Figure 1 of 1
 The Dynamic Sample Borehole was terminated at 4.33m depth due to the presence of an obstruction. Backfill details from base of hole: bentonite seal up to 1.00m, arisings up to ground level. 22/02/2021
 Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020



BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL

Engineer CAMPBELL REITH LLP

Borehole Project No **WS07**
PN204160

Client CAMPBELL REITH LLP

National Grid Coordinates 388089.6 E
417918.0 N

Ground Level 227.43 m OD


Sampling			Properties		Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
0.10- 0.40	B				MADE GROUND: Black tarmacadam.	G.L.		227.43
0.20	ES					0.10		227.33
0.50	D				MADE GROUND: Dark grey sandy medium to coarse gravel with a high subangular cobble content of sandstone and concrete. Gravel is angular to subangular fine to coarse of coal, ash and concrete.	0.40		227.03
0.50	ES					0.60		226.83
0.60- 0.80	B				MADE GROUND: Soft to firm light brown mottled dark grey slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of limestone, coal, ash and concrete.	0.80		226.63
0.70	ES							
					MADE GROUND: Dark grey slightly sandy clayey angular to subangular fine to coarse gravel of limestone, coal, slate, ceramic, ash and concrete. Medium subangular cobble content of concrete.			
					End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.80	0.40	Inspection Pit	KD/DP	G.I. 0.80		0.60	28/10/20	08:00	0.80		0.60	20		Fast inflow.

Remarks Inspection pit hand excavated to 0.80m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at a depth of 0.80m due to groundwater inflow.
 Backfill details from base of hole: arisings up to 0.25m, concrete up to 0.15m, tarmacadam up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021



BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL Engineer CAMPBELL REITH LLP Borehole Project No WS08 PN204160
 Client CAMPBELL REITH LLP National Grid Coordinates 388097.6 E 417876.3 N Ground Level 226.46 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.20- 0.60	B					MADE GROUND: Black tarmacadam.	G.L.		226.46	
0.20	ES						0.15		226.31	
0.50	ES					MADE GROUND: Brownish grey slightly clayey medium sand and subangular fine to coarse gravel of limestone, sandstone, ash and concrete.	0.60		225.86	
0.60- 1.00	B									
1.00	ES					MADE GROUND: Stiff brown mottled dark grey slightly sandy gravelly clay with a high subrounded cobble content of sandstone. Gravel is angular to subangular fine to coarse of limestone, sandstone, concrete and brick fragments.	1.30		225.16	
1.20- 1.65	D	(DRY)	TR= 90%	17	S10					
1.20 2.00										
1.30- 2.00	B									
2.00- 3.00	B		TR= 100%	30	S8	Firm brown mottled grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone, sandstone, siltstone and coal. Locally grading to clayey silt.				
2.00 3.00										
2.00- 2.45	D	(DRY)								
2.00	ES									
3.00- 4.00	B		TR= 100%	17	S11					
3.00 4.00										
3.00- 3.45	D	(DRY)								
4.00- 4.32	D	(DRY)	9.3		S50/ 170	At 4.32m, cobble obstruction.	4.32		222.14	
						End of Borehole				

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.			28/10/20	08:00						None encountered.
4.32	0.10	Dynamic Sampler		4.32		DRY	28/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at 4.32m depth due to the presence of an obstruction.
 A 50mm standpipe was installed to 4.00m with a slotted section from 1.50m to 4.00m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 1.50m, bentonite seal up to ground level.

Logged by DP
 Figure 1 of 1
 22/02/2021

geotechnics

All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL

Engineer CAMPBELL REITH LLP

Borehole Project No **WS09**
PN204160

Client CAMPBELL REITH LLP

National Grid Coordinates 388062.8 E
417927.2 N

Ground Level 227.47 m OD


Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.30- 0.80	B					MADE GROUND: Grey concrete paving slab.	G.L.		227.47	
0.30	ES					MADE GROUND: Grey gravelly coarse sand. Gravel is angular fine to coarse of quartzite and limestone.	0.05		227.42	
0.70	ES					MADE GROUND: Soft greyish brown slightly sandy slightly gravelly clay with a medium subrounded cobble content of sandstone. Gravel is angular to subrounded fine to coarse of sandstone, coal, mudstone and concrete.	0.15		227.32	
0.80- 1.20	B					Very soft to soft brown slightly gravelly sandy CLAY with a low subrounded cobble content of sandstone. Gravel is angular to subrounded fine to coarse of sandstone, limestone, mudstone and coal. Locally grading to clayey silt. Below 2.00m, high cobble content.	0.80		226.67	
1.00	ES									
1.20- 2.00	B		TR= 100%	14	S4					
1.20 2.00	D	(DRY)								
1.20- 1.65	D	(DRY)								
2.00- 3.00	B		TR= 90%		S3					
2.00 3.00	D	(DRY)								
2.00- 2.45	D	(DRY)								
3.00- 3.30	D	(DRY)		22	S50/150	At 3.30m, cobble obstruction.				
						End of Borehole	3.30		224.17	

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit		G.I.		DRY	29/10/20	08:00						Seepage - no rise.
3.30	0.10	Dynamic Sampler		3.30		DRY	29/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at 3.30m depth due to the presence of an obstruction.
 Backfill details from base of hole: arisings up to 0.05m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.
 All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
 Figure 1 of 1
 22/02/2021



BOREHOLE RECORD - Dynamic Sampler

Project WHITWORTH COMMUNITY HIGH SCHOOL

Engineer CAMPBELL REITH LLP

Borehole Project No **WS10**
PN204160

Client CAMPBELL REITH LLP

National Grid Coordinates 388051.4 E
417896.7 N

Ground Level 227.53 m OD


Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD	
0.10- 0.45	B					MADE GROUND: Black tarmacadam.	G.L.		227.53	
0.35	ES					MADE GROUND: Soft dark grey sandy slightly clayey gravel with a high subangular to subrounded cobble content of sandstone and concrete. Gravel is angular to subangular fine to coarse of ash, clinker, coal and mudstone.	0.10		227.43	
0.45- 1.20	B						0.45		227.08	
1.00	ES					MADE GROUND: Soft brownish grey slightly sandy gravelly clay with a high subangular to subrounded cobble content of sandstone and concrete. Gravel is angular to subangular fine to coarse of limestone, mudstone, sandstone, coal and concrete.	1.20		226.33	
1.20- 2.00	B		TR= 100%		S20					
1.20 2.00	D	(DRY)	13							
2.00- 3.00	B		TR= 80%		S7	Soft brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of mudstone, siltstone, sandstone and coal. At 1.20m, locally stiff.				
2.00 3.00	D	(DRY)	11							
2.00- 2.45	ES									
2.00										
3.00- 4.00	B		TR= 70%		S3	At 3.00m, locally very soft.				
3.00 4.00	D	(DRY)	20							
3.00- 3.45										
4.00- 4.45	D	(DRY)	TR= 20		S6	Between 4.00m and 5.00m, no recovery.				
4.00 5.00			0%							
End of Borehole							5.00		222.53	

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.40	Inspection Pit	KD/DP	G.I.		DRY	29/10/20	08:00						None encountered.
5.00	0.10	Dynamic Sampler	KD/DP	5.00		DRY	29/10/20	18:00						

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.
 ABS sample = 2 x vials, 1 x plastic jar and 2 x amber jars.
 The Dynamic Sample Borehole was terminated at a depth of 5.00m under the instruction of the Client.
 A 50mm standpipe was installed to 3.00m with a geowrapped slotted section from 1.00m to 3.00m with flush lockable protective cover. Backfill details from base of hole: collapsed material up to 4.00m, bentonite seal up to 3.00m, gravel filter up to 1.00m, arisings up to 0.20m, concrete up to 0.10m, tarmacadam up to ground level.

Logged in accordance with BS5930:2015 + A1:2020

Logged by DP
Figure 1 of 1
22/02/2021



Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'				
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50
WS01	1.20	223.49	S	-	2	2	2	2	3	3	10	*				
WS01	2.00	222.69	S	-	2	2	2	2	3	3	10	*				
WS01	3.00	221.69	S	-	2	2	2	2	2	2	8	*				
WS01	4.00	220.69	S	-	5	5	6	6	6	6	24		*			
Driller			Carl Vincent			Remarks										
Hammer No.			AR1760													
Energy Ratio, Er (%)			65.00													
Calibration Date			18/05/2020													

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'					
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50	
WS02	1.20	223.53	S	-	1	1	2	1	-	1	4	*					
WS02	2.00	222.73	S	-	1	1	2	2	3	3	10	*					
WS02	3.00	221.73	S	-	3	4	4	6	6	6	22		*				
WS02	4.00	220.73	S	-	10	10	10	40/20			50/95						>
Driller			Carl Vincent			Remarks											
Hammer No.			AR1760														
Energy Ratio, Er (%)			65.00														
Calibration Date			18/05/2020														

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'				
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50
WS03	1.20	223.95	S	-	1	2	2	2	2	2	8	*				
WS03	2.00	223.15	S	-	2	2	2	6	12	15	35				*	
WS03	3.00	222.15	S	-	6	6	6	6	6	6	24		*			
WS03	4.00	221.15	S	-	3	3	3	5	5	5	18		*			
WS03	5.00	220.15	S	-	3	3	3	3	4	4	14	*				
Driller			Carl Vincent				Remarks									
Hammer No.			AR1760													
Energy Ratio, Er (%)			65.00													
Calibration Date			18/05/2020													

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'					
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50	
WS04	1.20	224.49	S	-	2	2	2	2	2	2	8	*					
WS04	2.00	223.69	S	-	3	3	4	4	4	4	16		*				
WS04	3.00	222.69	S	-	6	6	6	6	6	32/10	50/235						>
Driller			Carl Vincent			Remarks											
Hammer No.			AR1760														
Energy Ratio, Er (%)			65.00														
Calibration Date			18/05/2020														

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'					
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50	
WS05	1.20	223.37	S	-	1	1	1	1	2	2	6	*					
WS05	2.00	222.57	S	-	2	2	2	2	3	3	10	*					
WS05	3.00	221.57	S	-	3	3	3	3	3	3	12	*					
WS05	4.00	220.57	S	-	3	4	6	6	6	6	24		*				
WS05	5.00	219.57	S	-	7	7	5	3	3	3	14	*					
Driller			Carl Vincent			Remarks											
Hammer No.			AR1760														
Energy Ratio, Er (%)			65.00														
Calibration Date			18/05/2020														

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'					
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50	
WS06	1.20	223.57	S	-	2	2	2	2	2	2	8	*					
WS06	2.00	222.77	S	-	2	2	2	2	2	2	8	*					
WS06	3.00	221.77	S	-	2	2	2	2	4	4	12	*					
WS06	4.00	220.77	S	-	5	5	5	8	37/30		50/180						>
Driller			Carl Vincent			Remarks											
Hammer No.			AR1760														
Energy Ratio, Er (%)			65.00														
Calibration Date			18/05/2020														

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'				
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50
WS08	1.20	225.26	S	-	2	2	2	2	3	3	10	*				
WS08	2.00	224.46	S	-	2	2	2	2	2	2	8	*				
WS08	3.00	223.46	S	-	2	2	2	3	3	3	11	*				
WS08	4.00	222.46	S	-	7	7	7	7	36/20		50/170					>
Driller			Carl Vincent			Remarks										
Hammer No.			AR1760													
Energy Ratio, Er (%)			65.00													
Calibration Date			18/05/2020													

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'					
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50	
WS09	1.20	226.27	S	-	1	1	1	1	1	1	4	*					
WS09	2.00	225.47	S	-	1	-	1	-	1	1	3	*					
WS09	3.00	224.47	S	-	5	5	5	45			50/150						>
Driller			Carl Vincent				Remarks										
Hammer No.			AR1760														
Energy Ratio, Er (%)			65.00														
Calibration Date			18/05/2020														

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'						
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10	20	30	40	50		
WS10	1.20	226.33	S	-	2	2	5	5	5	5	20		*					
WS10	2.00	225.53	S	-	1	2	2	1	2	2	7	*						
WS10	3.00	224.53	S	-	1	-	1	-	1	1	3	*						
WS10	4.00	223.53	S	-	1	1	1	2	2	1	6	*						
Driller			Carl Vincent				Remarks											
Hammer No.			AR1760															
Energy Ratio, Er (%)			65.00															
Calibration Date			18/05/2020															

-/- Blows/penetration (mm) after seating

-*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

GEOTECHNICS

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR1760
Test Date: 18/05/2020
Report Date: 18/05/2020
File Name: AR1760.spt
Test Operator: CM

Instrumented Rod Data

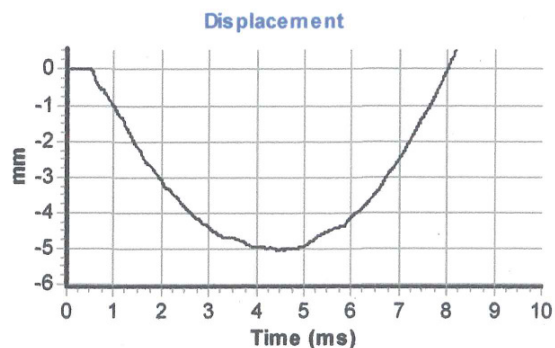
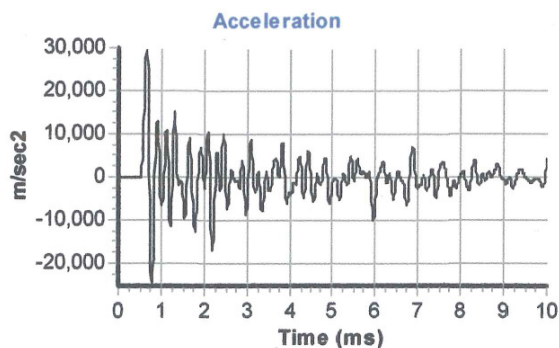
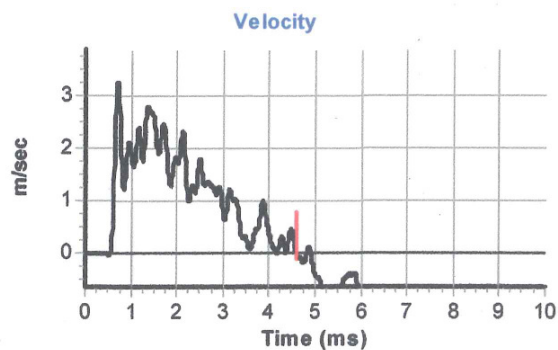
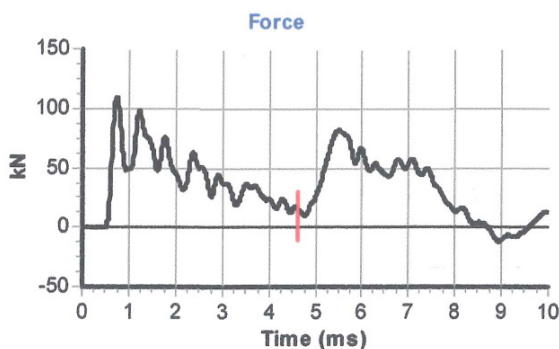
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

RAY MAKLIN



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 309

Energy Ratio E_r (%): **65**

Signed: C. McCLUSKEY
Title: FITTER

The recommended calibration interval is 12 months

APPENDIX 3

Monitoring Results

FIELDWORK - Water Level Monitoring

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No PN204160

Client Campbell Reith LLP

Sheet No 1

Borehole		WS02		WS03		WS05		WS08		WS10			
Instrument (dia. mm)		S (50mm)		S (50mm)		S (0mm)		S (50mm)		S (50mm)			
Depth to Base (m)		4.00		4.00		2.50		4.00		3.00			
Filter Zone (m)		1.00-4.10		1.00-4.00		0.50-2.50		1.50-4.00		1.00-3.00			
Level		224.73 m OD		225.15 m OD		224.57 m OD		226.46 m OD		227.53 m OD			
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
23 Nov 2020		1.43	223.30	3.35	221.80	0.68	223.89	0.52	225.94	1.20	226.33		
4 Dec 2020		0.82	223.91	3.25	221.90	0.60	223.97	0.97	225.49	1.22	226.31		
9 Dec 2020		0.82	223.91	3.20	221.95	0.56	224.01	0.43	226.03	1.56	225.97		

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
geotechnical and geoenvironmental specialists

FIELDWORK - Insitu Gas Monitoring - Hole Record

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No: PN204160

Client Campbell Reith LLP

Hole WS05

Sheet No: 3 (Sheet 1)

Hole		WS05	WS05	WS05				
Date of Reading (dd/mm/yyyy)		23/11/2020	04/12/2020	09/12/2020				
Installation Details	Type	S	S	S				
	Depth to Base (m)	2.50	2.50	2.50				
	Ground Level	224.57 m O	224.57 m O	224.57 m O				
	Filter Zone (m)	0.50 - 2.50	0.50 - 2.50	0.50 - 2.50				
	Date Installed	28/10/2020	28/10/2020	28/10/2020				
	Cover Type	Flush lockable	Flush lockable	Flush lockable				
Weather	Wind	Still	Light	Still				
	Precipitation	Dry	Slight	Dry				
	Cloud	Cloudy	Overcast	Overcast				
Site Conditions	Temperature °C							
	Ground Condition	Frozen	Wet	Moist				
Equipment Used		GA5000	GFM436 Gas Analyser	GA5000				
Monitored by		JA	AVM	JA				
Current Hole Depth m bgl		2.30	2.30	2.33				
Methane (Peak) (CH4) % VOL		0.1	0.0	0.1				
Methane (Steady) (CH4) % VOL		0.1	0.0	0.1				
Carbon Dioxide (Peak) % VOL		0.2	0.2	0.3				
Carbon Dioxide (Steady) % VOL		0.2	0.2	0.2				
Oxygen (Peak) % VOL		20.4	17.0	20.3				
Oxygen (Steady) % VOL		20.4	17.0	20.3				
Hydrogen Sulphide (H2S) ppm		0	0	0				
Carbon Monoxide (CO) ppm		0	0	0				
Balance Check %		79		79				
Barometric Pressure mbar		998	995	978				
Flow Rate (Peak) l/hr		0.0	0.1	0.0				
Flow Rate (Steady) l/hr		0.0	0.0	0.0				
Remarks								

APPENDIX 4

Laboratory Test Results - Geotechnical

Classification and Strength

Symbol	C - Clay (0 - containing organic matter) Plasticity	M - Silt L - Low I - Intermediate H - High V - Very High E - Extremely High
I_p	Plasticity Index	
%	% retained on 425 μ m sieve, shown under I_p value	
w_L	Liquid Limit	
w_p	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
ρ_d	Particle Density	
Test	Quick undrained triaxial tests	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm^2)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - \sqrt{t}

Rock

UF	Unacceptable Failure
----	----------------------

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO_3 %, value in brackets expressed as SO_4 %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5 = 2.5 kg Rammer
	4.5 = 4.5 kg Rammer
	V = Vibrating Hammer

γ_b Bulk Density

γ_d Dry Density

CBR California Bearing Ratio

Type	2.5 = Test on Specimen Recompacted using 2.5 kg Rammer
	4.5 = As above but using 4.5 kg Rammer
	V = As above but using Vibrating Hammer
	M = Test on open drive mould specimen cut in field
	S = Soaked Specimen

Top CBR at top of mould

Bottom CBR at bottom of mould

ND None Detected


* In the Sample Description denotes a laboratory only description

LABORATORY RESULTS - Classification and Strength

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No: PN204160

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) ³ Mg/m ³	σ_3 kN/m ²	$\sigma_1 - \sigma_3$ kN/m ²	c_u kN/m ²	c_{Avg} kN/m ²
WS01	2.00- 2.45 (2.00)	D	N82304	Brown very gravelly clayey fine to coarse SAND.		(36%)	24	NP	24.9						
WS02	1.20- 1.65 (1.20)	D	N82307	Soft brown slightly sandy slightly gravelly CLAY.					15.2						
WS02	2.00- 2.45 (2.00)	D	N82309	Firm brown slightly sandy slightly gravelly CLAY.					12.4						
WS02	3.00- 3.45 (3.00)	D	N82310	Stiff brown slightly sandy gravelly CLAY.	CL	14 (56%)	28	14	14.3						
WS03	1.00 (1.00)	D	N82311	PROBABLE MADE GROUND: Brown slightly sandy clayey silt.		(0%)	22	NP	15.6						
WS03	2.00- 2.45 (2.00)	D	N82313	Stiff brown slightly sandy slightly gravelly CLAY.					13.7						
WS03	3.00- 3.45 (3.00)	D	N82314	Stiff brown slightly sandy slightly gravelly CLAY.					10.4						
WS03	4.00- 4.45 (4.00)	D	N82315	Stiff brown slightly sandy slightly gravelly CLAY.					14.3						
WS03	5.00- 5.45 (5.00)	D	N82316	Firm brown slightly sandy slightly gravelly CLAY.					13.4						
WS04	1.40- 2.00 (1.40)	B	N82318	Brown sandy very clayey fine to coarse GRAVEL.		(68%)	23	NP	10.7						
WS06	1.20- 1.65 (1.20)	D	N82323	PROBABLE MADE GROUND: Orangish brown gravelly clayey medium to coarse sand.					12.7						
WS06	2.00- 2.45 (2.00)	D	N82325	Stiff brown slightly sandy slightly gravelly CLAY.	CL	16 (29%)	31	15	15.7						
WS06	3.00- 3.45 (3.00)	D	N82326	Firm brown slightly sandy slightly gravelly CLAY.					8.3						
WS06	4.00- 4.33 (4.00)	D	N82327	Stiff brown slightly sandy slightly gravelly CLAY.					9.5						
WS08	1.30- 2.00 (1.30)	B	N82328	Brown slightly sandy slightly gravelly clayey SILT.		(32%)	22	NP	17.4						


Remarks  NST - Not suitable for Test
 For Standards followed see Laboratory Test Certificate
 $w\%$ - \wedge = Rock water content test; x = Aggregate moisture content test
 QUT Water Contents: <Failure Zone>, [After test]

GEOTECHNICS
 geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Classification and Strength

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No: PN204160

Sample					Classification				Strength						
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) ³ Mg/m ³	σ_3 kN/m ²	$\sigma_1 - \sigma_3$ kN/m ²	c_u kN/m ²	c_{Avg} kN/m ²
WS08	2.00- 2.45 (2.00)	D	N82329	Firm brown slightly sandy slightly gravelly CLAY.					29.6						
WS08	3.00- 3.45 (3.00)	D	N82330	Firm brown slightly sandy slightly gravelly CLAY.					17.1						
WS08	4.00- 4.32 (4.00)	D	N82331	Stiff brown slightly sandy slightly gravelly CLAY.					9.3						
WS09	1.20- 1.65 (1.20)	D	N82332	Brown gravelly sandy clayey SILT.		(48%)	21	NP	14.2						
WS09	3.00- 3.30 (3.00)	D	N82333	Stiff brown slightly sandy slightly gravelly CLAY.					22.1						
WS10	1.20- 1.65 (1.20)	D	N82334	Firm brown slightly sandy slightly gravelly CLAY.					12.9						
WS10	2.00- 2.45 (2.00)	D	N82335	Soft brown slightly sandy slightly gravelly CLAY.					10.9						
WS10	3.00- 3.45 (3.00)	D	N82336	Very soft to soft brown slightly sandy slightly gravelly CLAY.					20.4						
WS10	4.00- 4.45 (4.00)	D	N82337	Soft brown slightly sandy slightly gravelly CLAY.					20.3						
<p>Remarks  NST - Not suitable for Test For Standards followed see Laboratory Test Certificate w% - ^ = Rock water content test; x = Aggregate moisture content test QUT Water Contents: <Failure Zone>, [After test]</p>															

LABORATORY RESULTS - Atterberg Limit

Project WHITWORTH COMMUNITY HIGH SCHOOL

Project No: PN204160

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym- bol	p %	>425 sieve µm	w _L %	w _p %
						Cone Pene.	Water % (Factor)					
WS01	2.00- 2.45 (2.00)	D	N82304	Brown very gravelly clayey fine to coarse SAND.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					36%	24	NP
WS02	3.00- 3.45 (3.00)	D	N82310	Stiff brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	56%	28	14
WS03	1.00 (1.00)	D	N82311	PROBABLE MADE GROUND: Brown slightly sandy clayey silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					0%	22	NP
WS04	1.40- 2.00 (1.40)	B	N82318	Brown sandy very clayey fine to coarse GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					68%	23	NP
WS06	2.00- 2.45 (2.00)	D	N82325	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	29%	31	15
WS08	1.30- 2.00 (1.30)	B	N82328	Brown slightly sandy slightly gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					32%	22	NP
WS09	1.20- 1.65 (1.20)	D	N82332	Brown gravelly sandy clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					48%	21	NP

Remarks 

LABORATORY RESULTS - Particle Size Distribution

Project: WHITWORTH COMMUNITY HIGH SCHOOL

Hole: WS01

Sample Depth: 3.00-4.00m

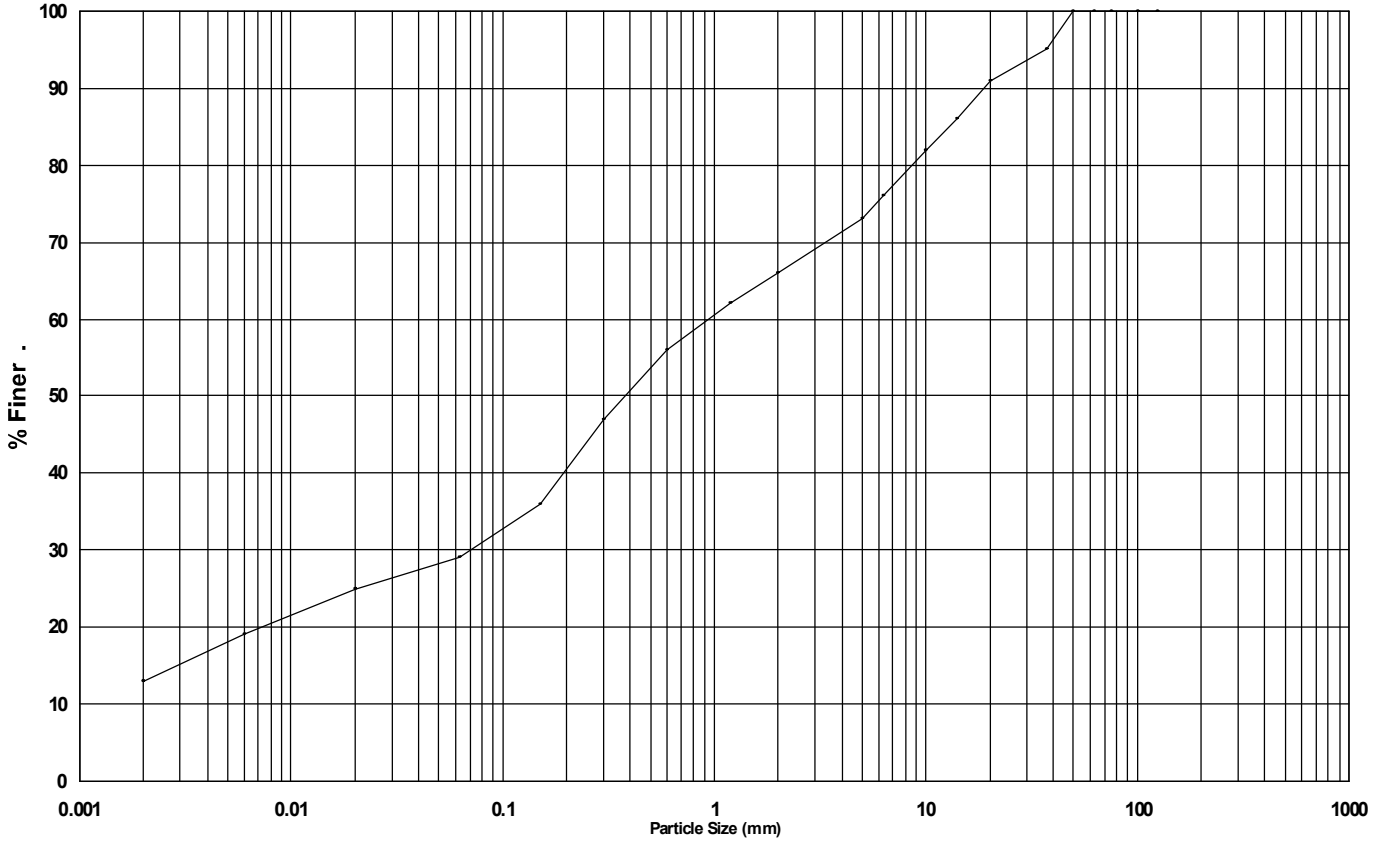
Project No: PN204160

Sample Type: B

Sample Ref: N82305

Sample Description

Firm brown slightly gravelly sandy silty CLAY.



Classification	CLAY			SILT			SAND			Gravel			Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse					

Classification	% of each
CLAY	13
SILT	16
SAND	37
GRAVEL	34
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	95
20 mm	91
14 mm	86
10 mm	82
6.3 mm	76
5 mm	73
2 mm	66
1.18 mm	62
600 µm	56
300 µm	47
150 µm	36

Size	% Finer
63 µm	29
20 µm	25
6 µm	19
2 µm	13

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	1.05
Particle Density	2.65 (Assumed)

Remarks: Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

18/01/2021

LABORATORY RESULTS - Particle Size Distribution

Project: WHITWORTH COMMUNITY HIGH SCHOOL

Hole: WS02

Sample Depth: 2.00-3.00m

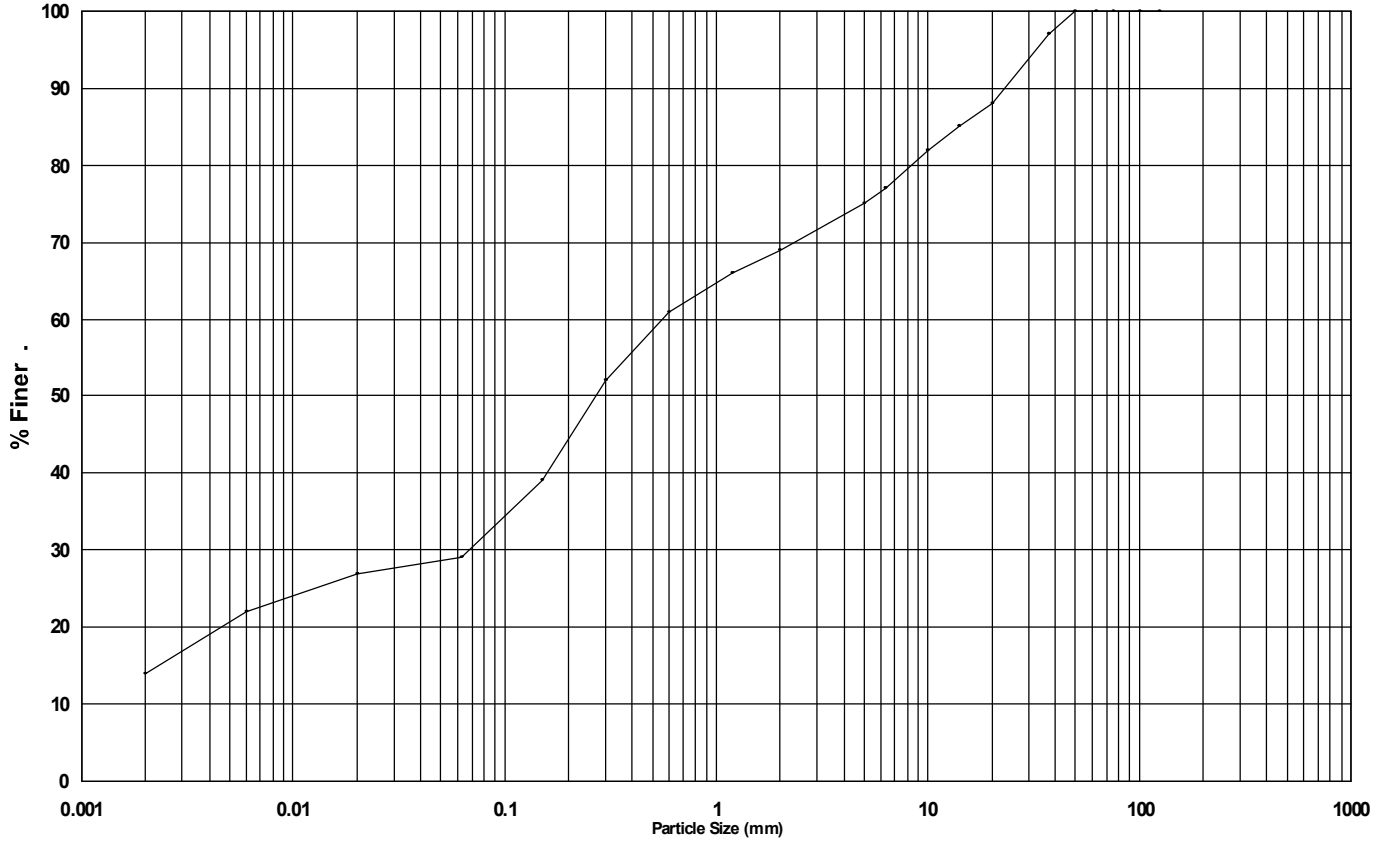
Project No: PN204160

Sample Type: B

Sample Ref: N82308

Sample Description

Firm brown slightly gravelly sandy CLAY.



Classification	CLAY			SILT			SAND			Gravel			Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse					

Classification	% of each
CLAY	14
SILT	15
SAND	40
GRAVEL	31
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	88
14 mm	85
10 mm	82
6.3 mm	77
5 mm	75
2 mm	69
1.18 mm	66
600 μm	61
300 μm	52
150 μm	39

Size	% Finer
63 μm	29
20 μm	27
6 μm	22
2 μm	14

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.90
Particle Density	2.65 (Assumed)

Remarks: Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

18/01/2021

LABORATORY RESULTS - Particle Size Distribution

Project: WHITWORTH COMMUNITY HIGH SCHOOL

Hole: WS03

Sample Depth: 1.30-2.00m

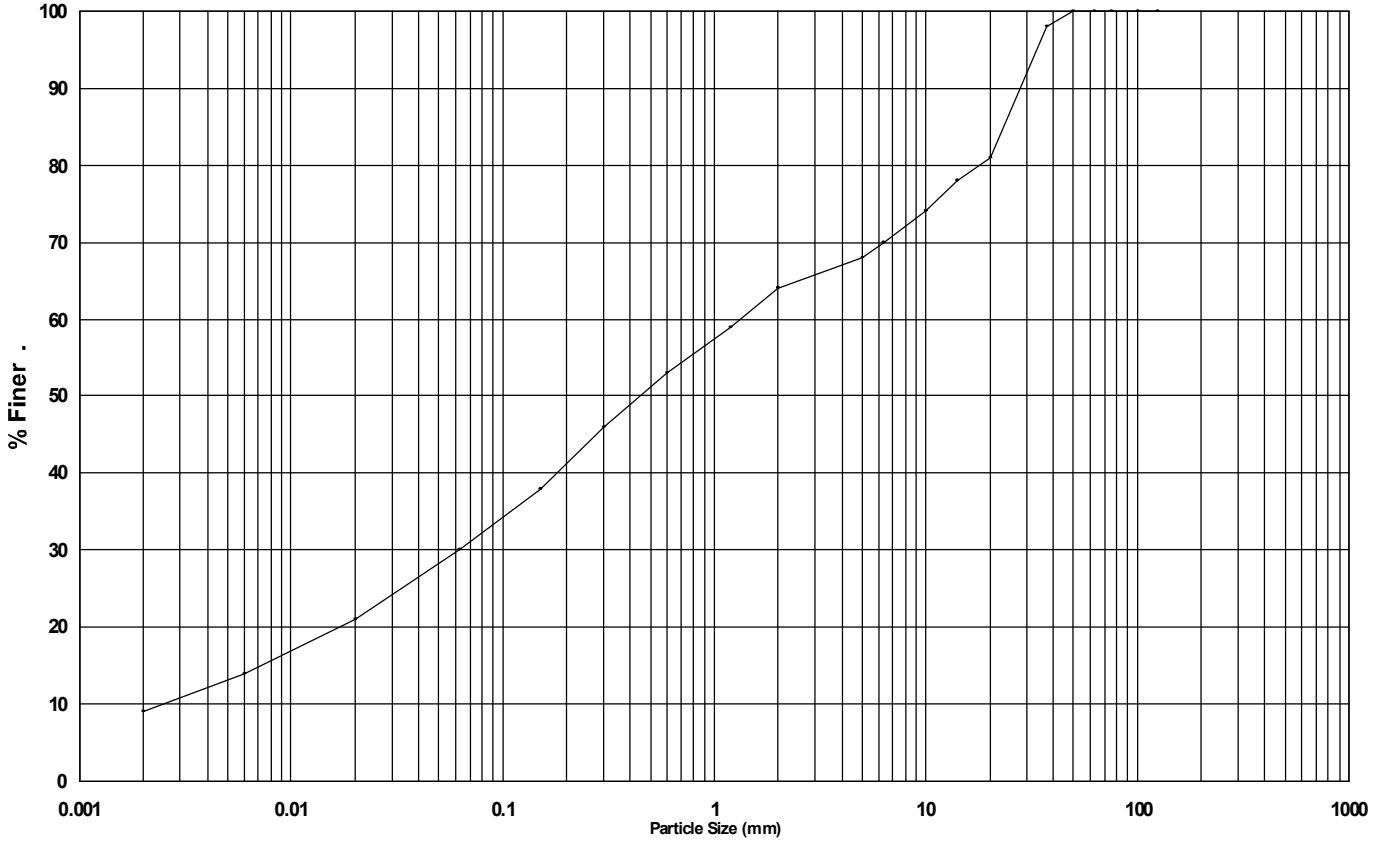
Project No: PN204160

Sample Type: B

Sample Ref: N82312

Sample Description

Firm brown slightly sandy gravelly silty CLAY.



Classification	CLAY			SILT			SAND			Gravel			Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse					

Classification	% of each
CLAY	9
SILT	21
SAND	34
GRAVEL	36
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	81
14 mm	78
10 mm	74
6.3 mm	70
5 mm	68
2 mm	64
1.18 mm	59
600 μm	53
300 μm	46
150 μm	38

Size	% Finer
63 μm	30
20 μm	21
6 μm	14
2 μm	9

Uniformity Coefficient	
539.79	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.70
Particle Density	2.65 (Assumed)

Remarks: Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

18/01/2021

LABORATORY RESULTS - Particle Size Distribution

Project: WHITWORTH COMMUNITY HIGH SCHOOL

Hole: WS05

Sample Depth: 1.50-2.00m

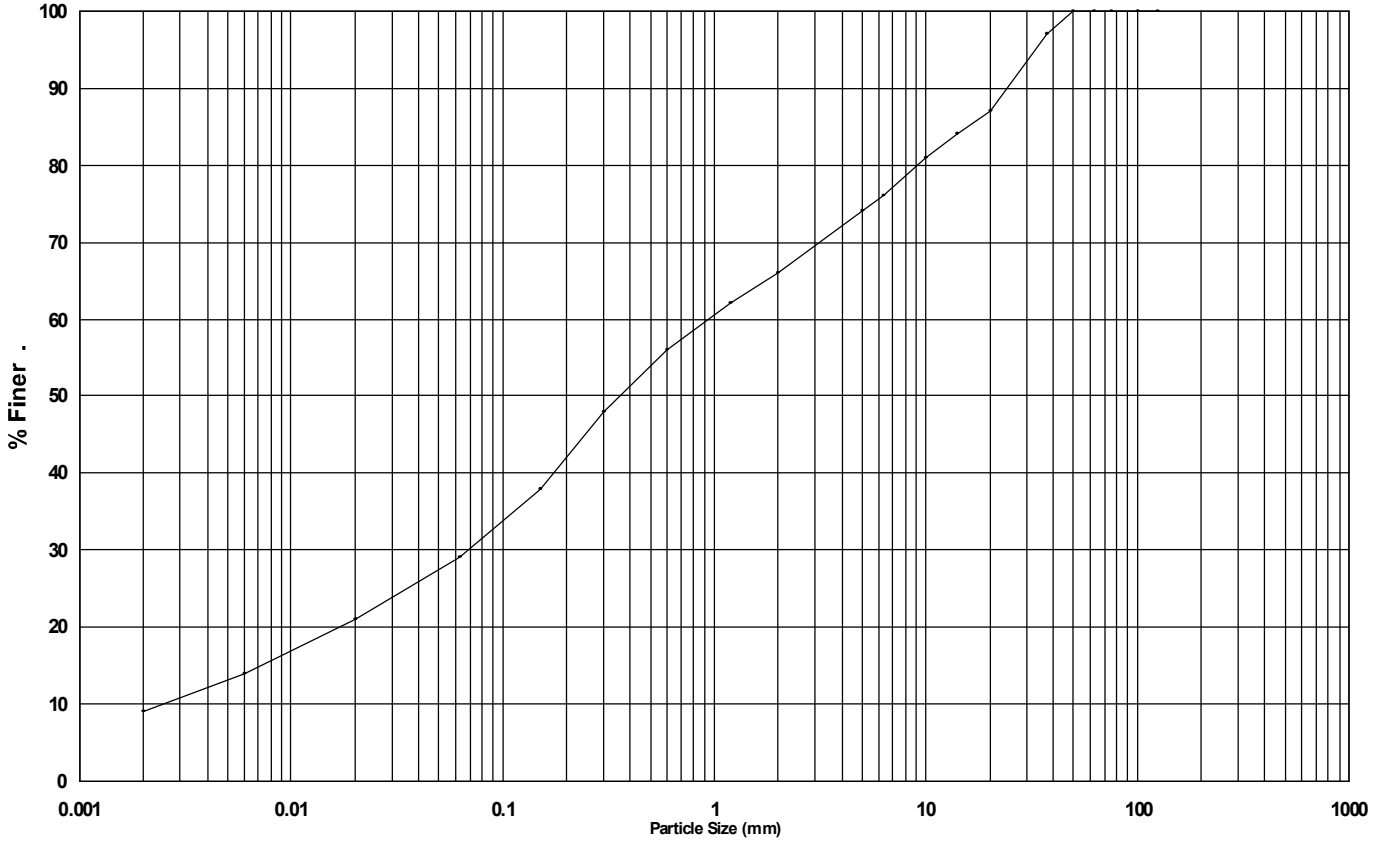
Project No: PN204160

Sample Type: B

Sample Ref: N82320

Sample Description

PROBABLE MADE GROUND: Soft brown slightly gravelly sandy silty clay.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	20
SAND	37
GRAVEL	34
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	87
14 mm	84
10 mm	81
6.3 mm	76
5 mm	74
2 mm	66
1.18 mm	62
600 μm	56
300 μm	48
150 μm	38

Size	% Finer
63 μm	29
20 μm	21
6 μm	14
2 μm	9

Uniformity Coefficient	
375.07	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	1.00
Particle Density	2.65 (Assumed)

Remarks: Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

18/01/2021

LABORATORY RESULTS - Particle Size Distribution

Project: WHITWORTH COMMUNITY HIGH SCHOOL

Hole WS06

Sample Depth 2.00-3.00m

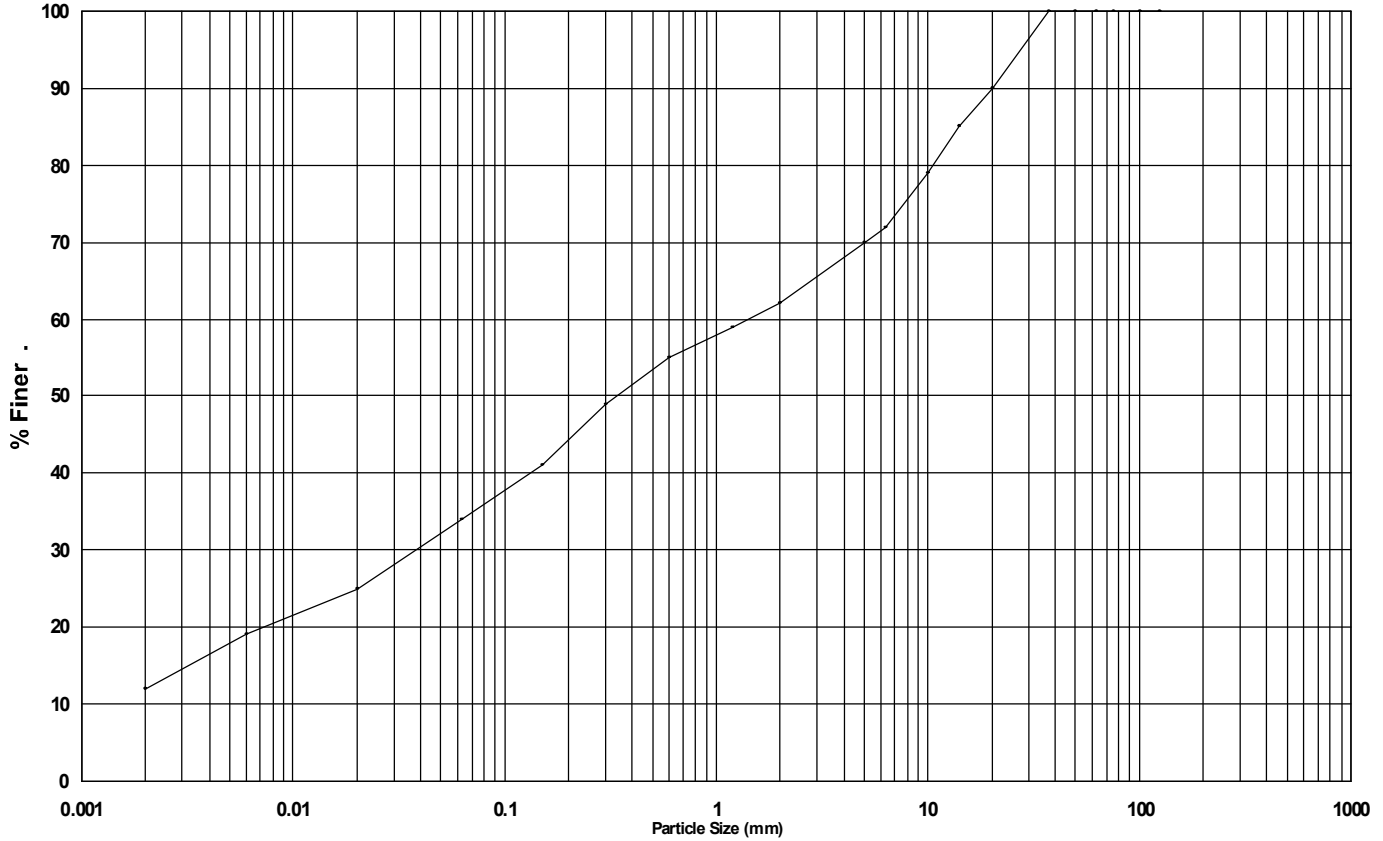
Project No: PN204160

Sample Type B

Sample Ref N82324

Sample Description

Firm brown slightly sandy gravelly silty CLAY.



Classification	CLAY			SILT			SAND			Gravel			Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse					

Classification	% of each
CLAY	12
SILT	22
SAND	28
GRAVEL	38
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	90
14 mm	85
10 mm	79
6.3 mm	72
5 mm	70
2 mm	62
1.18 mm	59
600 μm	55
300 μm	49
150 μm	41

Size	% Finer
63 μm	34
20 μm	25
6 μm	19
2 μm	12

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	1.76
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

18/01/2021



Certificate of Analysis

Certificate Number 20-24031

01-Dec-20

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 20-24031

Client Reference PN204160

Order No AUTH-OL27661

Contract Title Whitworth Community High School

Description 13 Soil samples.

Date Received 25-Nov-20

Date Started 25-Nov-20

Date Completed 01-Dec-20

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

A handwritten signature in black ink, appearing to read 'A Fenwick'.

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis Soil Samples

Our Ref 20-24031

Client Ref PN204160

Contract Title Whitworth Community High School

Lab No	1766636	1766637	1766638	1766639	1766640	1766641	1766642	1766643	1766644	1766645	1766646
Sample ID	WS01	WS02	WS04	WS05	WS05	WS06	WS08	WS09	WS09	WS10	WS03
Depth	3.00-3.45	1.20-1.65	2.00-2.45	2.20	4.50	3.00-3.45	2.00-2.45	1.20-1.65	3.00-3.30	2.00-2.45	1.00
Other ID											
Sample Type	D	D	D	D	D	D	D	D	D	D	D
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
pH	DETSC 2008#		pH	8.6	8.2	7.1	6.9	5.2	8.1	7.1	7.0	6.6	8.2	8.1
Organic matter	DETSC 2002#	0.1	%	1.3	3.6	0.3	0.6	0.6	0.2	0.6	1.1	0.7	1.1	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	940	39	57	18	12	10	28	24	16	26	14

Summary of Chemical Analysis Soil Samples

Our Ref 20-24031

Client Ref PN204160

Contract Title Whitworth Community High School

Lab No	1766647	1766648
Sample ID	WS04	WS06
Depth	0.60-1.00	1.20-1.65
Other ID		
Sample Type	B	D
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Inorganics					
pH	DETSC 2008#		pH	7.5	7.5
Organic matter	DETSC 2002#	0.1	%		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	11	17

Information in Support of the Analytical Results

Our Ref 20-24031

Client Ref PN204160

Contract Whitworth Community High School

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1766636	WS01 3.00-3.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766637	WS02 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766638	WS04 2.00-2.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766639	WS05 2.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766640	WS05 4.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766641	WS06 3.00-3.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766642	WS08 2.00-2.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766643	WS09 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766644	WS09 3.00-3.30 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766645	WS10 2.00-2.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1766646	WS03 1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1766647	WS04 0.60-1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1766648	WS06 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

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

Information in Support of the Analytical Results

Our Ref 20-24031
Client Ref PN204160
Contract Whitworth Community High School

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425 μ m 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

APPENDIX 5

Laboratory Test Results - Contamination (Soil)



DETS

Certificate of Analysis

Certificate Number 20-22487

11-Nov-20

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 20-22487

Client Reference PN204160

Order No ON27375

Contract Title Whitworth Community, High School

Description 14 Soil samples.

Date Received 04-Nov-20

Date Started 06-Nov-20

Date Completed 11-Nov-20

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



Adam Fenwick
Contracts Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756942	1756943	1756944	1756945	1756946
Sample ID	WS01	WS02	WS03	WS04	WS04
Depth	0.50	0.20	0.50	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/10/2020	27/10/2020	27/10/2020	27/10/2020	27/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Moisture Content	DETSC 1004	0.1	%	32	23	18	9.5	26
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	9.8	9.9	11	6.4	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.3	0.2	0.3
Chromium	DETSC 2301#	0.15	mg/kg	20	18	19	19	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	33	39	34	23	42
Lead	DETSC 2301#	0.3	mg/kg	47	50	52	16	48
Mercury	DETSC 2325#	0.05	mg/kg	0.10	0.18	0.11	< 0.05	0.11
Nickel	DETSC 2301#	1	mg/kg	20	20	21	25	29
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	61	77	70	66	68
Inorganics								
pH	DETSC 2008#		pH	6.3	7.5	7.3	8.8	7.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.2	0.2	< 0.1	0.2
Total Organic Carbon	DETSC 2084#	0.5	%	4.5		2.9		6.5
Sulphide	DETSC 2024*	10	mg/kg	< 10	32	< 10	20	20
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.06	0.08	0.05	0.04	0.06
Petroleum Hydrocarbons								
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10	< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 10	14	< 10	56	< 10
EPH (C21-C40)	DETSC 3311	10	mg/kg	< 10	190	< 10	1700	350



Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487
 Client Ref PN204160
 Contract Title Whitworth Community, High School

Lab No	1756942	1756943	1756944	1756945	1756946
Sample ID	WS01	WS02	WS03	WS04	WS04
Depth	0.50	0.20	0.50	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/10/2020	27/10/2020	27/10/2020	27/10/2020	27/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.05	0.04	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.10	0.06	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.09	0.05	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.05	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03	0.04	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	0.33	0.12	< 0.10	< 0.10
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.4	< 0.3	< 0.3	0.3

Summary of Chemical Analysis Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756947	1756948	1756949	1756950	1756951
Sample ID	WS05	WS05	WS06	WS06	WS07
Depth	0.50	1.00	0.20	1.00	0.20
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	28/10/2020	28/10/2020	28/10/2020	28/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Moisture Content	DETSC 1004	0.1	%	8.3	27	6.2		24
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	5.7	12	7.2		9.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.2		0.4
Chromium	DETSC 2301#	0.15	mg/kg	14	15	20		13
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	24	25	26		31
Lead	DETSC 2301#	0.3	mg/kg	20	27	8.5		13
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.07	< 0.05		< 0.05
Nickel	DETSC 2301#	1	mg/kg	16	16	25		23
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5		< 0.5
Zinc	DETSC 2301#	1	mg/kg	53	58	78		39
Inorganics								
pH	DETSC 2008#		pH	8.2	8.1	8.5		8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%		2.4		0.5	14
Sulphide	DETSC 2024*	10	mg/kg	20	20	< 10		68
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.05	0.03		0.07
Petroleum Hydrocarbons								
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10		< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10	< 10		14
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 10	< 10	26		110
EPH (C21-C40)	DETSC 3311	10	mg/kg	110	< 10	970		1600

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756947	1756948	1756949	1756950	1756951
Sample ID	WS05	WS05	WS06	WS06	WS07
Depth	0.50	1.00	0.20	1.00	0.20
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	28/10/2020	28/10/2020	28/10/2020	28/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.68
Pyrene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.72
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.29
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.39
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.04		0.43
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.21
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.29
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.13
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.16
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.16	< 0.10	< 0.10		3.4
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3		< 0.3

Summary of Chemical Analysis Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756952	1756953	1756954	1756955
Sample ID	WS08	WS09	WS09	WS10
Depth	0.20	0.30	0.80	0.35
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	29/10/2020	29/10/2020	29/10/2020
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004	0.1	%	8.4	13		15
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	4.9	4.6		6.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1		0.5
Chromium	DETSC 2301#	0.15	mg/kg	15	17		10
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	20	25		27
Lead	DETSC 2301#	0.3	mg/kg	6.1	13		13
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05		< 0.05
Nickel	DETSC 2301#	1	mg/kg	18	22		20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5		< 0.5
Zinc	DETSC 2301#	1	mg/kg	43	50		89
Inorganics							
pH	DETSC 2008#		pH	8.9	7.1		8.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1		< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%			0.7	
Sulphide	DETSC 2024*	10	mg/kg	16	44		60
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.05	0.03		0.08
Petroleum Hydrocarbons							
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1		< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1		< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10		< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10		15
EPH (C16-C21)	DETSC 3311	10	mg/kg	12	< 10		44
EPH (C21-C40)	DETSC 3311	10	mg/kg	270	< 10		1300

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756952	1756953	1756954	1756955
Sample ID	WS08	WS09	WS09	WS10
Depth	0.20	0.30	0.80	0.35
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	29/10/2020	29/10/2020	29/10/2020
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.32
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		1.6
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		1.2
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		4.8
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		2.3
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		8.6
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		7.9
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		3.8
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		3.4
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		4.8
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		2.4
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		5.6
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		2.0
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.48
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		3.0
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10		52
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		< 0.3

Summary of Asbestos Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1756942	WS01 0.50	SOIL	NAD	none	Darryl Fletcher
1756945	WS04 0.30	SOIL	NAD	none	Darryl Fletcher
1756946	WS04 0.50	SOIL	NAD	none	Darryl Fletcher
1756948	WS05 1.00	SOIL	NAD	none	Darryl Fletcher
1756949	WS06 0.20	SOIL	NAD	none	Darryl Fletcher
1756951	WS07 0.20	SOIL	NAD	none	Darryl Fletcher
1756952	WS08 0.20	SOIL	NAD	none	Darryl Fletcher
1756955	WS10 0.35	SOIL	NAD	none	Darryl Fletcher

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 20-22487
 Client Ref PN204160
 Contract Whitworth Community, High School

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1756942	WS01 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756943	WS02 0.20 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756944	WS03 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756945	WS04 0.30 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756946	WS04 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756947	WS05 0.50 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756948	WS05 1.00 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756949	WS06 0.20 SOIL	28/10/20	GJ 250ml, PT 1L		
1756950	WS06 1.00 SOIL	28/10/20	GJ 250ml, PT 1L		
1756951	WS07 0.20 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756952	WS08 0.20 SOIL	28/10/20	GJ 250ml, PT 1L		
1756953	WS09 0.30 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		
1756954	WS09 0.80 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		
1756955	WS10 0.35 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		

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

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

Soil Analysis Notes

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

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

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

Disposal

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

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

End of Report



DETS

Certificate of Analysis

Certificate Number 20-22487

11-Nov-20

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 20-22487

Client Reference PN204160

Order No ON27375

Contract Title Whitworth Community, High School

Description 14 Soil samples.

Date Received 04-Nov-20

Date Started 06-Nov-20

Date Completed 11-Nov-20

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



Adam Fenwick
Contracts Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756942	1756943	1756944	1756945	1756946
Sample ID	WS01	WS02	WS03	WS04	WS04
Depth	0.50	0.20	0.50	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/10/2020	27/10/2020	27/10/2020	27/10/2020	27/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Moisture Content	DETSC 1004	0.1	%	32	23	18	9.5	26
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	9.8	9.9	11	6.4	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.3	0.2	0.3
Chromium	DETSC 2301#	0.15	mg/kg	20	18	19	19	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	33	39	34	23	42
Lead	DETSC 2301#	0.3	mg/kg	47	50	52	16	48
Mercury	DETSC 2325#	0.05	mg/kg	0.10	0.18	0.11	< 0.05	0.11
Nickel	DETSC 2301#	1	mg/kg	20	20	21	25	29
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	61	77	70	66	68
Inorganics								
pH	DETSC 2008#		pH	6.3	7.5	7.3	8.8	7.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.2	0.2	< 0.1	0.2
Total Organic Carbon	DETSC 2084#	0.5	%	4.5		2.9		6.5
Sulphide	DETSC 2024*	10	mg/kg	< 10	32	< 10	20	20
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.06	0.08	0.05	0.04	0.06
Petroleum Hydrocarbons								
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10	< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 10	14	< 10	56	< 10
EPH (C21-C40)	DETSC 3311	10	mg/kg	< 10	190	< 10	1700	350



Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487
 Client Ref PN204160
 Contract Title Whitworth Community, High School

Lab No	1756942	1756943	1756944	1756945	1756946
Sample ID	WS01	WS02	WS03	WS04	WS04
Depth	0.50	0.20	0.50	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/10/2020	27/10/2020	27/10/2020	27/10/2020	27/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.05	0.04	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.10	0.06	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.09	0.05	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.05	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03	0.04	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	0.33	0.12	< 0.10	< 0.10
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.4	< 0.3	< 0.3	0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756947	1756948	1756949	1756950	1756951
Sample ID	WS05	WS05	WS06	WS06	WS07
Depth	0.50	1.00	0.20	1.00	0.20
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	28/10/2020	28/10/2020	28/10/2020	28/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Moisture Content	DETSC 1004	0.1	%	8.3	27	6.2		24
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	5.7	12	7.2		9.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.2		0.4
Chromium	DETSC 2301#	0.15	mg/kg	14	15	20		13
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	24	25	26		31
Lead	DETSC 2301#	0.3	mg/kg	20	27	8.5		13
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.07	< 0.05		< 0.05
Nickel	DETSC 2301#	1	mg/kg	16	16	25		23
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5		< 0.5
Zinc	DETSC 2301#	1	mg/kg	53	58	78		39
Inorganics								
pH	DETSC 2008#		pH	8.2	8.1	8.5		8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%		2.4		0.5	14
Sulphide	DETSC 2024*	10	mg/kg	20	20	< 10		68
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.05	0.03		0.07
Petroleum Hydrocarbons								
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10		< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10	< 10		14
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 10	< 10	26		110
EPH (C21-C40)	DETSC 3311	10	mg/kg	110	< 10	970		1600



Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487
 Client Ref PN204160
 Contract Title Whitworth Community, High School

Lab No	1756947	1756948	1756949	1756950	1756951
Sample ID	WS05	WS05	WS06	WS06	WS07
Depth	0.50	1.00	0.20	1.00	0.20
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	28/10/2020	28/10/2020	28/10/2020	28/10/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.68
Pyrene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.72
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.29
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.39
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.04		0.43
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.21
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.29
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.13
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03		0.16
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.16	< 0.10	< 0.10		3.4
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3		< 0.3

Summary of Chemical Analysis Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756952	1756953	1756954	1756955
Sample ID	WS08	WS09	WS09	WS10
Depth	0.20	0.30	0.80	0.35
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	29/10/2020	29/10/2020	29/10/2020
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004	0.1	%	8.4	13		15
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	4.9	4.6		6.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1		0.5
Chromium	DETSC 2301#	0.15	mg/kg	15	17		10
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	20	25		27
Lead	DETSC 2301#	0.3	mg/kg	6.1	13		13
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05		< 0.05
Nickel	DETSC 2301#	1	mg/kg	18	22		20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5		< 0.5
Zinc	DETSC 2301#	1	mg/kg	43	50		89
Inorganics							
pH	DETSC 2008#		pH	8.9	7.1		8.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1		< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%			0.7	
Sulphide	DETSC 2024*	10	mg/kg	16	44		60
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.05	0.03		0.08
Petroleum Hydrocarbons							
EPH (C6-C8)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1		< 0.1
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1		< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10		< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10		15
EPH (C16-C21)	DETSC 3311	10	mg/kg	12	< 10		44
EPH (C21-C40)	DETSC 3311	10	mg/kg	270	< 10		1300

Summary of Chemical Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	1756952	1756953	1756954	1756955
Sample ID	WS08	WS09	WS09	WS10
Depth	0.20	0.30	0.80	0.35
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	28/10/2020	29/10/2020	29/10/2020	29/10/2020
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.32
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		1.6
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		1.2
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		4.8
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		2.3
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		8.6
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		7.9
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		3.8
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03		3.4
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		4.8
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		2.4
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		5.6
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		2.0
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.48
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		3.0
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10		52
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		< 0.3

Summary of Asbestos Analysis

Soil Samples

Our Ref 20-22487

Client Ref PN204160

Contract Title Whitworth Community, High School

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1756942	WS01 0.50	SOIL	NAD	none	Darryl Fletcher
1756945	WS04 0.30	SOIL	NAD	none	Darryl Fletcher
1756946	WS04 0.50	SOIL	NAD	none	Darryl Fletcher
1756948	WS05 1.00	SOIL	NAD	none	Darryl Fletcher
1756949	WS06 0.20	SOIL	NAD	none	Darryl Fletcher
1756951	WS07 0.20	SOIL	NAD	none	Darryl Fletcher
1756952	WS08 0.20	SOIL	NAD	none	Darryl Fletcher
1756955	WS10 0.35	SOIL	NAD	none	Darryl Fletcher

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 20-22487
 Client Ref PN204160
 Contract Whitworth Community, High School

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1756942	WS01 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756943	WS02 0.20 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756944	WS03 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756945	WS04 0.30 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756946	WS04 0.50 SOIL	27/10/20	GJ 250ml x2, GJ 60ml	pH + Conductivity (7 days)	
1756947	WS05 0.50 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756948	WS05 1.00 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756949	WS06 0.20 SOIL	28/10/20	GJ 250ml, PT 1L		
1756950	WS06 1.00 SOIL	28/10/20	GJ 250ml, PT 1L		
1756951	WS07 0.20 SOIL	28/10/20	GJ 250ml x2, GJ 60ml		
1756952	WS08 0.20 SOIL	28/10/20	GJ 250ml, PT 1L		
1756953	WS09 0.30 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		
1756954	WS09 0.80 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		
1756955	WS10 0.35 SOIL	29/10/20	GJ 250ml x2, GJ 60ml		

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

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

Soil Analysis Notes

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

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

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

Disposal

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

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

End of Report

APPENDIX 6

Laboratory Test Results - Contamination (Groundwater)

Geotechnics

Unit 1B
Borders Industrial Park
River Lane
Chester
Cheshire
CH4 8RJ



Attention : Jon Hutchinson
Date : 15th December, 2020
Your reference : PN204160
Our reference : Test Report 20/17150 Batch 1
Location :
Date samples received : 4th December, 2020
Status : Final report
Issue : 1

Five samples were received for analysis on 4th December, 2020 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:**Paul Boden BSc**

Senior Project Manager

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/17150

SOILS

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

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics extracted.
#2	EU_Total but with fatty acids extracted.
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 20/17150

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry); Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

Geotechnics

Unit 1B
Borders Industrial Park
River Lane
Chester
Cheshire
CH4 8RJ



Attention : Jon Hutchinson
Date : 15th December, 2020
Your reference : PN204160
Our reference : Test Report 20/17150 Batch 1
Location :
Date samples received : 4th December, 2020
Status : Final report
Issue : 1

Five samples were received for analysis on 4th December, 2020 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:**Paul Boden BSc**

Senior Project Manager

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/17150

SOILS

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

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics extracted.
#2	EU_Total but with fatty acids extracted.
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 20/17150

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry); Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

APPENDIX 7
Exploratory Hole Location Plan