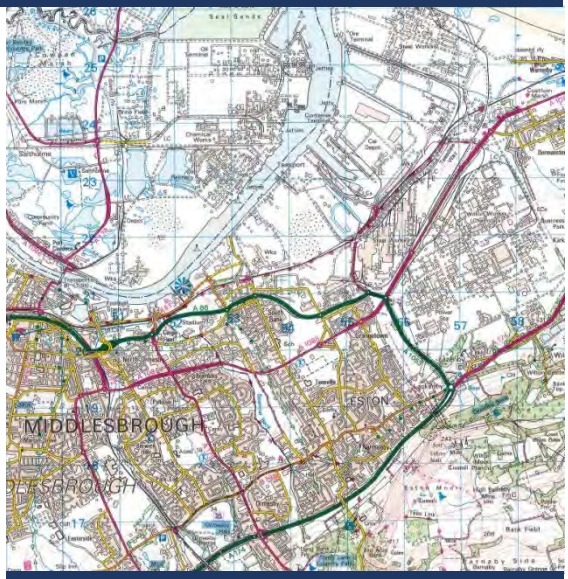
ESTON ROAD INTRUSIVE WORKS



Final Factual Report (Rev.00)

Contract Number: 4287
Client: South Tees Development Corporation
Consulting Engineer: Arcadis

Date: November 2020

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ALLIED EXPLORATION & GEOTECHNICS LIMITED

REPORT CONTROL SHEET

Contract Details

Contract Title	**Eston Road Intrusive Works**
Contract Number	4287
Location	**Middlesbrough Road East, Clay Lane Commercial Park, South Bank, Lackenby, TS6 6TZ**
National Grid Reference	NZ 543 210

Report Details

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ESTON ROAD INTRUSIVE WORKS

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CC	Concrete Coring

Text Abbreviations

1. INTRODUCTION

The site works were commissioned in order to determine the ground conditions on site prior to the construction of the proposed roundabout and spur road connected to Eston Road in Lackenby, Middlesbrough.

Allied Exploration & Geotechnics Limited (AEG) were contracted by South Tees Development Corporation with Arcadis acting in the capacity of Consulting Engineer to perform a ground investigation at this site in order to provide information on the subsurface ground and groundwater conditions as well as to obtain samples for geotechnical and specialist chemical testing.

1.1 Scope of Works

The investigation works consisted of the following main elements:

- Three road core holes.
- Twelve mechanically excavated trial pits.
- Associated sampling.
- *In-situ* Hand Shear Vane and TRL Dynamic Cone Penetrometer Testing.

Site work was carried out between the 15th and 19th June 2020 with subsequent laboratory testing and reporting thereafter. A factual report only was requested.

The comments and opinions expressed in this report are based on the ground conditions encountered during the site work and on the results of tests carried out in the field and in the laboratory. There may, however, be special conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report.

2. THE SITE

2.1 Location

The National Grid Reference of the approximate centre of the site is NZ 543 210. This can be found on Ordnance Survey 1:50,000 Sheet Number 93 (Middlesbrough, Darlington & Hartlepool). Part of this sheet is reproduced as Figure 1, the Site Location Plan.

The site is located approximately 3.7km east of the Riverside Stadium, and 3.8km west northwest of Wilton Castle.

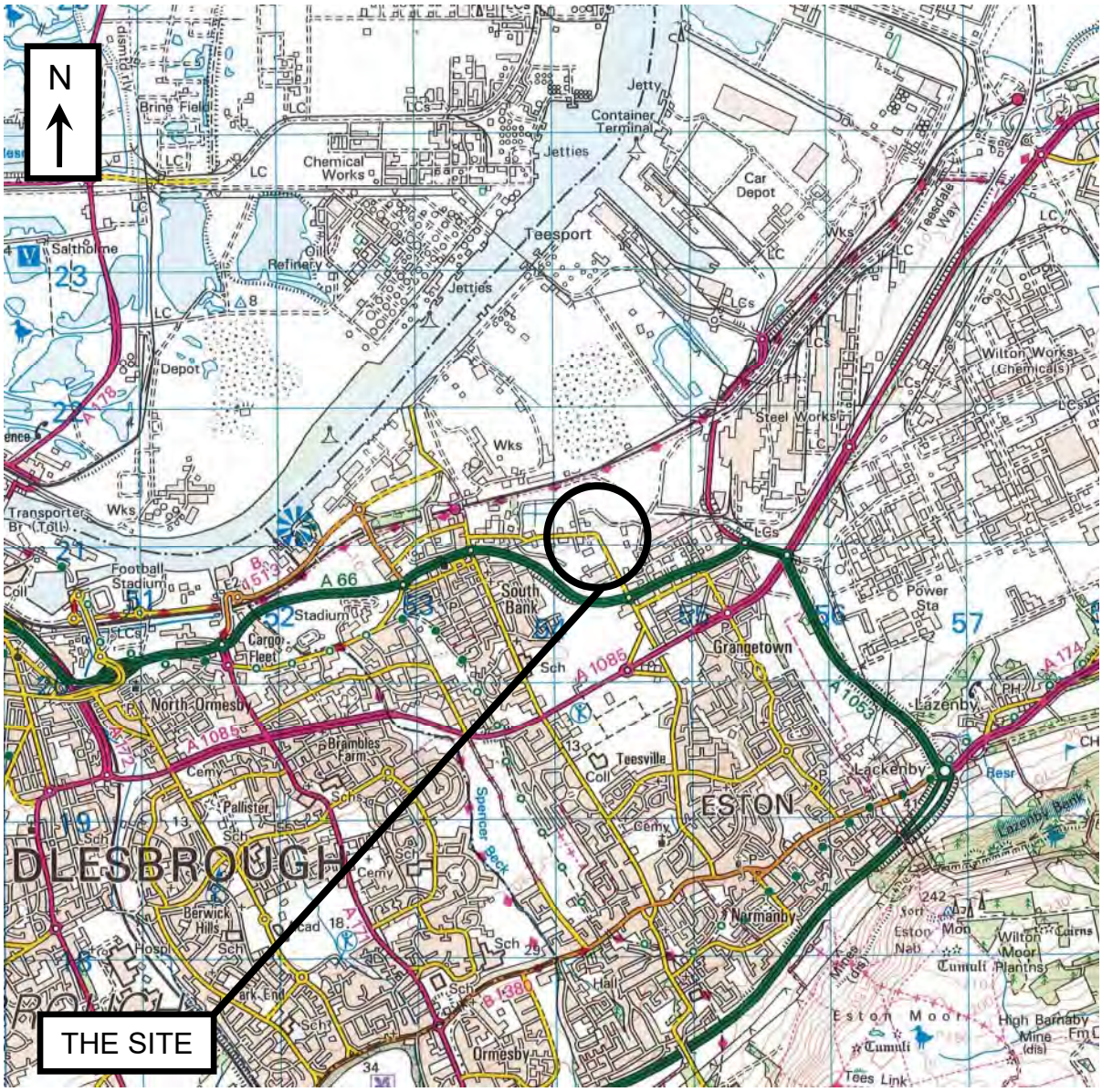


Figure 1: Site Location Plan

2.2 Site Description and Topography

The site is located on the corner of Middlesbrough Road East (running east-west), where it becomes Eston Road (running north-south). The site comprises mainly abandoned industrial land which is partially overgrown with vegetation and is bound to the south and west by industrial land uses, predominantly container storage. A railway line runs roughly east-west past the north of the site. The A66 runs approximately east-west roughly 0.5km south of the site, and the Tees Valley Railway Line lies approximately 0.5km to the north.

3. SITE OPERATIONS

3.1 General

All exploratory hole work, associated sampling, *in-situ* testing and logging was carried out in accordance with techniques outlined in Table 1, as appropriate; at positions as near as practicable to those supplied by the Consulting Engineer. These are shown on the Exploratory Hole Location Plan, Field Data Enclosure 1.

Reference Code Number	Title
BS 1377:1990	Methods of Test for Soils for Civil Engineering Purposes (where not in contravention or superseded by Eurocode references)
BS 5930:2015	Code of Practice for Ground Investigation (where not in contravention or superseded by Eurocode references)
BS EN ISO 14688-1:2018 & 14688-2:2018	Identification and Classification of Soil
BS 10175:2011+A2:2017	Investigation of Potentially Contaminated Sites

Table 1: British Standard Reference Code Number

The depths of all exploratory holes, descriptions of the material encountered, details of any groundwater encountered, samples taken and *in-situ* testing carried out together with any other relevant information can be found on the Road Core Holes and Trial Pit Records, Field Data Enclosures 2 and 3 respectively. A key to all symbols and abbreviations used throughout the report is included in the Key Sheets.

The primary purpose of ground investigation exploratory holes is to probe the stratified sequences of soil and/or rock. From the results of these probings no conclusion should be drawn concerning the presence of, size, lithological nature, and numbers per unit volume of ground cobbles and boulders in soil types such as glacial till (boulder clay). Refer to the Key Sheets for further information.

All works were undertaken with coordinated traffic management installed by Premier Traffic Management Limited along the carriageway to facilitate the investigation operation.

3.2 Health & Safety Considerations: Services

Before the commencement of any exploratory hole a search for underground services was conducted as prescribed in HSE publication '*Avoiding Underground Services (HSG47)*' and in accordance with in-house internal safety procedure AEG-14.

Service plans were provided by the Client and were consulted prior to using a service locating device (such as a Cable Avoidance Tool or C.A.T.) to scan a working area around the proposed exploratory hole location. Where no services were indicated a '*Permit-to-Work*' form was issued by the investigation supervisor and, with the exception of trial pits, the position was commenced with a hand excavated inspection pit. The inspection pit was also scanned during the excavation procedure. It should be noted that the digging of an inspection pit only confirms or guards against the possible presence of underground public utility services within the excavated pit. Where no services were indicated by the scanning procedure or inspection pit the exploratory hole was commenced in accordance with the Contract Specification.

Where services were located or there was reasonable belief that they were present, the position was relocated in agreement with the Client. Details of any services uncovered/located during this investigation are given in Table 2.

Exploratory Hole Number	Type of Service	Orientation & Depth (size where indicated)	Status (Damaged/Undamaged)	Additional Remarks
ATK_TP_001	Cast iron pipe	c.045° at 0.60m BGL (610mm diameter)	Undamaged	Sketch provided, please refer to Trial Pit Record
ATK_TP_002	Railway track line	0.80m BGL	Damaged/Removed	3.50m of track noted
ATK_TP_003	Cable	000° at 0.90m BGL (76mm diameter)	Damaged	None
ATK_TP_005	Cast iron pipe	090° at 0.40m BGL (152mm diameter)	Undamaged	None
	Cable	090° at 0.90m BGL (76mm diameter).	Damaged	None
ATK_TP_007	1 No. electric cable inside clay pipe conduit	135° at 0.80m BGL. (Cable - 25mm diameter Clay pipe - 152mm diameter)	Damaged	None
	2 No. electric cables	000° at 0.80m BGL (76mm diameter)	Damaged	None
	1 No. electric cable	090° at 0.80m BGL (76mm diameter)	Damaged	None

Table 2: Services Encountered

3.3 Exploratory Holes: Road Core Holes

Three vertical road cores were advanced using an Xcalibre Vulcan drilling rig, to depths of between 0.40m (RC003) and 0.53m BGL (RC001). This rig was used to recover 155mm unlined cylindrical specimens of road core. The Road Core Records are presented as Field Data Enclosure 2 and a summary of any relevant remarks are detailed in Table 3.

Exploratory Hole Number	Drilling Method	Completion Depth (m BGL)	Installation	Remarks
RC001	CC	0.53	No – reinstated	Advanced to required depth.
RC002	CC	0.47	No – reinstated	Advanced to required depth.
RC003	CC	0.40	No – reinstated	Advanced to required depth.
Any relevant photographs are presented after the applicable Road Core Record				

Table 3: Road Core Summary

3.4 Exploratory Holes: Mechanically Excavated Trial Pits

Twelve trial pits were mechanically excavated using a JCB 360 tracked excavator to a maximum depth of 3.50m BGL. The Trial Pit Records are presented as Field Data Enclosure 3 and a summary of any relevant remarks are detailed in Table 4.

Exploratory Hole Number	Excavation Method	Completion Depth (m BGL)	Remarks
ATK_TP_001	Machine Excavated	2.60	Terminated due to concrete slab.
ATK_TP_002	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_003	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_004	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_005	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_006	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_007	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_008	Machine Excavated	1.30	Terminated due to concrete slab.
ATK_TP_009	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_010	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_011	Machine Excavated	3.50	Advanced to required depth.
ATK_TP_012	Machine Excavated	3.50	Advanced to required depth.
Any relevant photographs are presented after the applicable Trial Pit Record			

Table 4: Trial Pit Summary

3.5 Samples

Representative samples of soil and road core were obtained from the exploratory holes and were taken to the laboratory for selected geotechnical and specialist chemical testing.

Environmental samples were taken in accordance with the contract specification during the investigation using an approved selection of container types in order to suit the encountered material properties and designated laboratory analytical parameters. Full chain of custody procedures were in place post sampling and during the transportation stage to the nominated specialist chemical laboratory. Environmental samples were administered appropriately following the best practice guidance provided in the contract specification.

3.6 Groundwater

The comments on groundwater conditions are based on the observations made at the time of investigation. It should be noted that groundwater levels may vary due to seasonal and other effects.

Groundwater was encountered in the majority of trial pits during the site works operation. Where groundwater observations were made details are given on the relevant Trial Pit Record and in greater detail (collectively in tabulated format) as Field Data Enclosure 4: Groundwater Observations Made at the Time of Site Works.

Standing groundwater levels were recorded in none of the drillholes at the beginning or end of each drilling shift.

3.7 Operative Observations: Potential Contamination

For the purposes of determining the condition of the site, with regard to human health and environmental issues, reference should specifically be made to any specialist chemical testing undertaken as part of the investigation scheme, as well as any supporting desk study and risk assessment documentation. The information given herein collates the observations made by the operatives involved in the investigation only and comments that have been indicated on the engineering records.

Where there was potential evidence of contamination, principally as a consequence of olfactory and visual identification, information is provided in Table 5.

Exploratory Hole Number	Occurrence (*in-situ*/surface/ laboratory sample)	Visual / Olfactory / Laboratory Testing	Depth (m BGL)	Occurrence Type	Additional Remarks
ATK_TP_009	*In-situ*	Olfactory	0.60-1.00	Slight hydrocarbon odour from wooden piles	None

Table 5: Potential Contamination Encountered

It should be stressed that the information provided herein is subjective, as it is based on the perceptions of individuals and not specialists routinely involved in the chemical determination of contaminated residues, liquors, vapours or solid contaminants.

3.8 Surveying

The investigation positions were surveyed after completion of site works using a Leica Smartrover (Model ATX 1230+ GNSS) GPS based instrument which provides corrected Ordnance Survey co-ordinates in real time to an accuracy of within ± 30mm vertical and ± 30mm horizontal. These positions have been subsequently plotted in AutoCAD® software and are shown on the Exploratory Hole Location Plan, Field Data Enclosure 1.

4. *IN-SITU* TESTING

4.1 General

In-situ testing as specified by the Consulting Engineer was carried out in selected at three selected points in accordance with techniques outlined in the relevant British Standard and/or AEG Quality Procedure. The results are presented in the *In-situ* Testing Enclosures.

4.2 Hand Shear Vane

Hand shear vane testing using calibrated Edeco Pilcon Hand Vane equipment was carried out in one trial pit (ATK_TP_012) in accordance to the ground conditions encountered. The results are presented in detail

within *In-situ* Testing Enclosure 2 with the average peak and residual shear strength values provided on the applicable Trial Pit Record.

4.3 TRL Dynamic Cone Penetrometer Testing

Three TRL dynamic cone penetrometer tests were undertaken to depths of between 2.02m (DCP2) and 2.31m BGL (DCP3) from ground level at three selected points. The results from this testing are presented as *In-situ* Testing Enclosure 3.

5. LABORATORY TESTING

5.1 General

Laboratory testing as scheduled by the Consulting Engineer was carried out on selected samples in accordance with techniques outlined in BS 1377:1990, AEG Laboratory Quality Procedures or other appropriate standard as quoted.

5.2 Geotechnical Testing

The results are presented in the Laboratory Enclosures with an outline list of the procedures undertaken given in Table 6.

Test	Procedure
Moisture Content	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)
Plasticity Index and Moisture Content	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)
Determination of Density by Linear Measurement	BS 1377 Part 2 1990 (BS EN ISO 17892-2:2014)
Determination of Particle Density	BS 1377 Part 2 1990
Particle Size Distribution Sieving	BS 1377 Part 2 1990
Particle Size Distribution Sedimentation	BS 1377 Part 2 1990
Determination of Organic Matter Content, Sulphate and pH (Tested externally)	See External Laboratory Certificates
Determination of Dry Density/Moisture Content Relationship	BS 1377 Part 4 1990
Determination of California Bearing Ratio	BS 1377 Part 4 1990

Table 6: Geotechnical Testing

5.3 Specialist Chemical Testing

Selected samples have been submitted for chemical analysis as specified by the Consulting Engineer, conducted under a subcontract arrangement with Derwentside Environmental Testing Services (DETS). The results of this testing are presented as Appendix I.

5.4 Laboratory Identified Asbestos

Selected samples were analysed for asbestos content as specified by the Consulting Engineer. Any identified asbestos is presented in Table 7 which has been summarised from specialist chemical testing results (see Appendix I for further details).

Exploratory Hole Number	Occurrence	Depth (m BGL)	Occurrence Type	Additional Remarks
ATK_TP_001	Laboratory Sample	0.60	Brown asbestos	Small bundles of Amosite present

Table 7: Laboratory Identified Asbestos

KEY SHEETS

Key Sheets

Allied Exploration and Geotechnics Limited
Key Sheets

INTRODUCTION

The following explanatory notes define the terminologies, abbreviations and symbols pertaining to each individual column or section of the Exploratory Hole records. 'Exploratory Hole' is used as a general term in this report to comprise borehole, drillhole, and trial pit. All exploratory hole records have been produced using ' gINT®', which is an integrated software environment for the storage and manipulation of subsurface data.

The primary purpose of ground investigation exploratory holes is to probe the stratified sequences of soil and/or rock. From the results of these probings no conclusion should be drawn concerning the presence of, size, lithological nature, and numbers per unit volume of ground cobbles and boulders in soil types such as glacial till (boulder clay). With respect to rotary coring, driller's records and observations of the recovered core are used to determine any zones of no recovery (core loss). These zones are based on the interpretation of the logging engineer and are therefore potentially subjective. In addition, where relevant, every effort is made to highlight material/zones that may relate to suspected old workings. However, it should be noted that this is not straightforward (especially without detailed information regarding anticipated subsurface conditions) and therefore no guarantee can be made with regards to the accuracy of the interpretation of the recovered core.

INFORMATION COMMON TO ALL EXPLORATORY HOLE RECORDS

Status Box
The status box in the top right hand corner of each exploratory hole record gives the status of each individual record i.e. PRELIM1, PRELIM2, PRELIM3 FINAL etc. The date shown relates to the last instance the data was revised. This information is for AEG Quality Assurance only.

Exploratory Hole No
The identity number used throughout the report.

Project
The ground investigation project name. Occasionally the project name may be shortened or abbreviated due to string length restraints imposed by the gINT® computer programme.

Client
Client's name responsible for funding the ground investigation project. The Client's name may be shortened or abbreviated due to string length restraints imposed by the gINT® computer programme.

Location
The exploratory hole position given as either national grid co-ordinates, local grid if specified, or a reference name normally pertaining to the area of investigation.

Method (Equipment)
Represents the drilling, excavation or boring method(s) or equipment used.

Ground Level (m(AOD))
The precise ground level in metres above Ordnance Datum at the exploratory hole location from which the reduced level for each stratigraphic boundary is calculated.

Date
The date relating to the start of the exploratory hole excavation.

Sheet
The sheet number and total number of sheets for the particular record.

Checked By
Printed signature of the person who has carried out the technical quality check on the log.

Logged By
The name of the engineer who has carried out the logging of the exploratory hole.

Contract No.
The Allied Exploration & Geotechnics Limited reference number for the project.

Allied Exploration and Geotechnics Limited
Key Sheets

INFORMATION RELEVANT TO BOREHOLE AND WINDOW/WINDOWLESS SAMPLE HOLE RECORDS

Sample & Tests Columns

Depth	The depth over which a sample or test is taken is shown in depth column of the exploratory hole record in a "from...to" format.
Type No	Indicates the type of sample/test and number given by the driller.
Test Result	Result of the test given in the applicable units.

Water Column

Water Strike	Level of groundwater strike within an exploratory hole. The symbol  denotes a water strike and is suffixed with a number, which indicates the strike order. The corresponding unfilled symbol  is the depth the strike rose to.
Seepage	Groundwater seepage within an exploratory hole is denoted by the  symbol.

Strata Columns

Reduced Level	The corresponding reduced level of each soil or rock boundary in metres Ordnance Datum.
Legend	A graphical representation of the materials encountered using BS 5930:2015 recommended symbols for soil and rock.
Depth (Thickness)	The depth below ground level of each soil or rock boundary in metres and the thickness of each individual stratigraphic unit (given in brackets).
Description	Engineering description of each individual soil or rock type follows recommendations outlined in Section 6 of BS 5930:2015 with the following implementation:

1 The amendment of section 6 incorporates the guidance indicated in BS EN ISO 14688-1:2018, BS EN ISO 14688-2:2018 and BS EN ISO 14689-1:2018 European Standard with particular emphasis on current UK practice.

2 Supplementary laboratory or in-situ assessed measurements of undrained strength are provided where applicable information is available in parenthesis in accordance with BS 5930:2015 after the field strength determined consistency. The description based measurement table indicating the quantitative undrained strength classification divisions is provided in Key Sheets Table 1.

Term based on measurement	**Undrained strength classification definition cu, in kPa** (from BS EN ISO 14688-2:2018, 5.3, Table 6)
Extremely low	<10
Very low	10-20
Low	20-40
Medium	40-75
High	75-150
Very High	150-300
Extremely High	300-600

KEY SHEETS TABLE 1

3 Cobble and boulder content is expressed in accordance with the terms provided in BS5930:2015 where visually identified in trial pit excavations, or inferred/recovered during the drilling operations. The assessment of frequency and spatial occurrence of coarse and very coarse rock material should not be considered as precise, but only an indicator or estimate of the potential conditions. It should be noted that the recovery of coarse or very coarse particles in boreholes is dependent on the limitations imposed by the casing diameter. The terminology used is outlined in Key Sheets Table 2.

Fraction	Percent by Mass	Term
Boulders	<5	Low boulder content
	5 to 20	Medium boulder content
	>20	High boulder content
Cobbles	<10	Low cobble content
	10 to 20	Medium cobble content
	>20	High cobble content

KEY SHEETS TABLE 2

4 Rock Strength based on assessed field or measured unconfined compressive strength follows the classification scheme given in BS5930:2015 as outlined in Key Sheets Table 3.

Term for use in field or based on measurement	Definition for field use	Definition on basis of Unconfined Compressive Strength measurement (MPa)	*Superseded Classification of Rock Strength: Terminology (Strength Range MPa)*	*Definition for field use*
Extremely weak	Scratched by thumbnail, gravel size lumps can be crushed between finger and thumb.	0.6-1.0	*Extremely weak (0.6-1.0)*	*Can be indented by thumbnail. Gravel sized lumps crush between finger and thumb.*
Very weak	Scratched by thumbnail, lumps can be brocken by heavy hand pressure, can be peeled easily by a pocket knife, crumbles under firm blows with point of geological hammer.	1-5	*Very weak (1-5)*	*Crumbles under firm blows with point of geological hammer. Can be peeled by a pocket knife.*
Weak	Thin slabs, corners or edges can be broken off with hand pressure, can be peeled by a pocket knife, shallow indentations made by firm blow with point of geological hammer.	5-12.5	*Weak (5-25)*	*Can be peeled by a pocket knife with difficulty. Shallow indentations made by firm blow with the point of geological hammer.*
Moderately Weak	Thin slabs, corners or edges can be broken off with hand pressure, can be scratched with difficulty by pocket knife, hand-held specimen can be broken with single firm blow of geological hammer.	12.5-25		
Medium Strong	Cannot be scraped or peeled with a pocket knife, specimen on a solid surface can be fractured with single firm blow of geological hammer.	25-50	*Medium Strong (25-50)*	*Cannot be scraped with pocket knife. Can be fractured with a single firm blow of geological hammer.*
Strong	Specimen requires more than one blow of geological hammer to fracture it.	50-100	*Strong (50-100)*	*Requires more than one blow of geological hammer to fracture.*
Very Strong	Specimen requires many blows of geological hammer to fracture it.	100-250	*Very Strong (100-250)*	*Requires many blows of geological hammer to fracture.*
Extremely strong	Specimen can only be chipped with geological hammer.	>250	*Extremely strong (<250)*	*Can only be chipped with geological hammer.*
Based on BS EN ISO 14689-1:2018 4.2.7, Table 2			*Based on BS EN ISO 14689-1:2003 4.2.7, Table 5 (Superseded Version)*	

KEY SHEETS TABLE 3

5 Where 'rock weathering classification' can be applied it is 'Approach 4' which will be used. If any other approach is used the factual text of the report will provide details of the applicable specific approach. (Ref.: BS5930:2015). An outline of the 'Approach 4' rock weathering classification scheme is provided as Key Sheets Table 4.

APPROACH 4 CLASSIFICATION INCORPORATING MATERIAL AND MASS FEATURES		
Class	**Classifier**	**Typical characteristics**
A	Unweathered	Original strength, colour, fracture spacing
B	Partially weathered	Slightly reduced strength, slightly closer fracture spacing, weathering penetrating in from fractures, brown oxidation
C	Distinctly weathered	Further weathered, much closer fracture spacing grey reduction
D	Destructured	Greatly weakened, mottled, ordered lithorelics in matrix becoming weakened and disordered, bedding disturbed.
E	Residual or reworked	Matrix with occasional altered random or 'apparent' lithorelics, bedding destroyed. Classed as reworked when foreign inclusions are present as a result of transportation.

KEY SHEETS TABLE 4

Allied Exploration and Geotechnics Limited
Key Sheets

Instrument/Backfill Column

A graphical representation of backfill material or instrumentation detail using graphic legends. Its placement in the column is relative to depth in metres and corresponds to the exploratory hole in scale.

Boring Progress and Water Observations Columns

This section provides information on each day's production as a daily log.

Date	Date of shift.
Depth	Depth of hole at the start of the shift.
Casing	Casing's depth at the start of the shift.
Casing Dia	Casing's diameter at the start of the shift.
Water Depth	Water level within the borehole at the start and end of shift.

Chiselling Columns

Indicates where hard strata occurred in the borehole and breaking out was carried out to advance the borehole.

From	The depth commenced.
To	The depth finished.
Hours	The time spent for breaking out.

Water Added Columns

Indicates the depth range where water was added to the borehole to facilitate boring or to prevent stress relief disturbance "blowing/boiling" in granular soils.

From	Depth in metres from where water was added.
To	Depth in metres to where water was added.

General Remarks

Any remarks believed to be relevant to the exploratory hole.

INFORMATION RELEVANT TO PIT/TRENCH RECORDS

The pit/trench records follow the same format as the borehole and window/windowless sample hole records for the Samples & Tests, Water and Strata columns. However, in addition to these there are the following:

Plan

A schematic plan view of the pit showing its excavated dimensions together with its orientation, given as a compass bearing to magnetic north.

Groundwater

Notes on water bearing horizons.

Stability

The engineer's comments outlining the stability of the sides during pit excavation.

General Remarks

The engineer's comments of any other information relevant to construction of the pit.

Additional Information

An indication if a sketch and/or photographs accompany the record.

Underground Services

Depth	Depth service was encountered.
Orientation	Orientation given as a compass bearing to magnetic north.
Type	Type of service encountered.
Diameter	Diameter of service encountered.
Condition	Condition the service encountered was noticed in.

INFORMATION RELEVANT TO DRILLHOLE RECORDS AND ROTARY CONTINUATION

Run Details Columns

Depth	Each drill run is highlighted by a horizontal line with the top and bottom depths shown in metres. Core diameter (C Dia) is presented also within each run.
TCR (SCR) RQD	Information provided on the total core recovery, solid core recovery and rock quality designation. Refer to Abbreviations for further details.
Fracture Index	Information given relating to the fracture index of the rock.

Strata Columns

As the strata columns for borehole and window/windowless sample hole records except for description which is as follows:

Discontinuities Detail	Information on core discontinuities, localised variations in weathering, lithology, strength and structure follows recommendations outlined in BS5930:2015.
Main	Engineering description of each individual soil or rock type follows recommendations outlined in BS5930:2015.

Instrument/Backfill Column

A graphical representation of backfill material or instrumentation detail using graphic legends. Its placement in the column is relative to depth in metres and corresponds to the exploratory hole in scale.

Drilling Progress and Water Observations Columns

Date	Date of shift.
Depth	Depth of hole at the start of the shift.
Casing	Casing's depth at the start of the shift.
Water Strike	Depth at which water was encountered.
Water Standing	Depth at which water in the hole levelled off.
Water Remarks	Any remarks believed to be relevant to the water e.g. Artesian.

Standard Penetration Test

Depth	The depth commenced.
Type	Type of standard penetration test (SPT).
Result	Result of SPT.

Flush

From	The depth commenced.
To	The depth finished.
Type	Details of the type of flush used. A = Air, F = Foam, W = Water and Pol = Polymer.
Returns	An indication of the percentage of the returned flush material.

General Remarks

Any remarks believed to be relevant to the exploratory hole.

Allied Exploration and Geotechnics Limited
Key Sheets

SAMPLES

B	Bulk disturbed sample.
ES	Environmental soil sample.
EW	Environmental water sample.
G	Gas sample.
J	Small disturbed sample.
LB	Large bulk disturbed sample.
P	Piston sample.
P*	An attempted but failed undisturbed piston sample.
U	Undisturbed sample.
U*	An attempted but failed general purpose undisturbed sample.
$U_{(ss)}$	Sample has been subsampled.
$ES_{(U)}$	Brackets following a sample denotes a subsample. The sample information within the brackets is the origin of the subsample.
W	Water sample.

IN-SITU TESTS

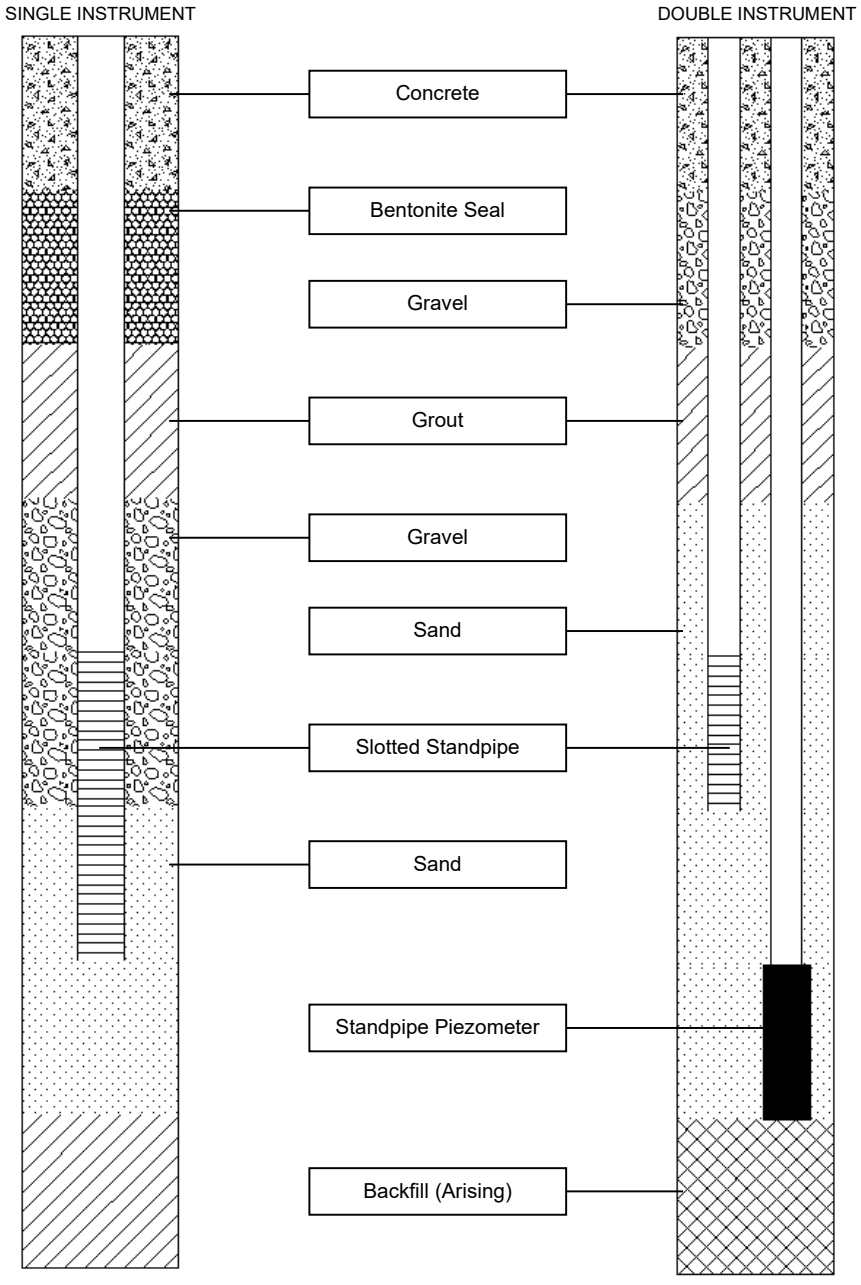
CBR	California Bearing Ratio mould sample or test.
HSV	In-situ hand shear vane.
HSV*	An attempted but failed in-situ hand shear vane.
HSV result of e.g 80(20)kPa	Denotes average HSV peak result followed by average HSV residual result (in brackets).
HP	Hand penetrometer test.
K (F)	Falling head permeability test.
K (R)	Rising head permeability test.
K (C)	Constant head permeability test.
K (P)	Packer permeability test.
PT	Pressuremeter test.
PID	Photo ionisation detector test.
FID	Flame ionisation detector test.
S	Standard Penetration Test (SPT) using the split barrel sampler (shoe). The corresponding uncorrected 'N' value is given in the test result column with more detailed information provided in the In-Situ Testing Enclosures where applicable. Testing has been conducted in accordance with BS EN ISO 22476-3: 2005.
C	Denotes SPT test using a solid cone in preference to the split barrel sampler (usually in coarse granular soil) with all other reporting requirements as outlined above for the split barrel sampler.
S/C result of e.g. 1/2.94	Denotes where full penetration has not been achieved during the SPT test. In such cases the penetration (mm) per blow is recorded in the test result column e.g. 1/2.94 is 2.94mm of penetration per single blow.
SV	In-situ down-the-hole shear vane test. The remoulded shear strength is given in brackets.

ROCK QUALITY AND CORE RECOVERY

TCR	Total Core Recovery - the length of the recovered core expressed as a percentage of the length of core run.
SCR	Solid Core Recovery - the sum length of all core pieces that are recovered with at least one full diameter, expressed as a percentage of the length of core run.
RQD	Rock Quality Designation - The sum length of all core pieces that are 100mm or longer (measured along the centre of the core), expressed as a percentage of the length of core run.
FI	Fracture Index - The number of fractures per 1000mm length of solid core.
NI	Non-intact - The material recovered in a non-intact state.
NR	No recovery from the core run. These zones are based on the interpretation of the logging engineer and are therefore potentially subjective.

Allied Exploration and Geotechnics Limited
Key Sheets

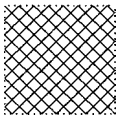
Symbols and Abbreviations: Explanation of Instrumentation Legends Used



Allied Exploration and Geotechnics Limited
Key Sheets

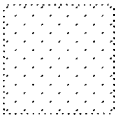
Symbols and Abbreviations: Explanation of Legends Used

Soils	Rocks		
	Sedimentary	*Metamorphic*	*Igneous*

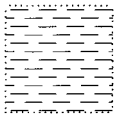

Made Ground


Cobbles and Boulders

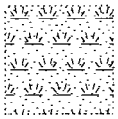

Gravel


Sand


Silt

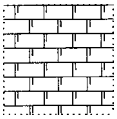

Clay

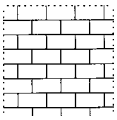

Peat

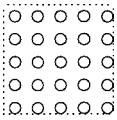

Topsoil

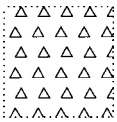
Note: Composite soil types will be signified by combined symbols e.g.

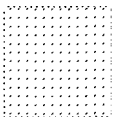

Silty Sand

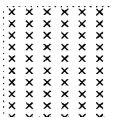

Chalk


Limestone


Conglomerate


Breccia


Sandstone


Siltstone

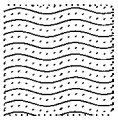

Mudstone

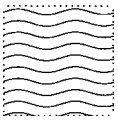

Shale

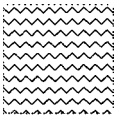

Coal

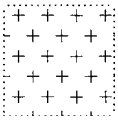

Pyroclastic (Volcanic Ash)

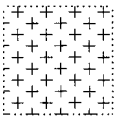

Gypsum


Coarse Grained


Medium Grained


Fine Grained

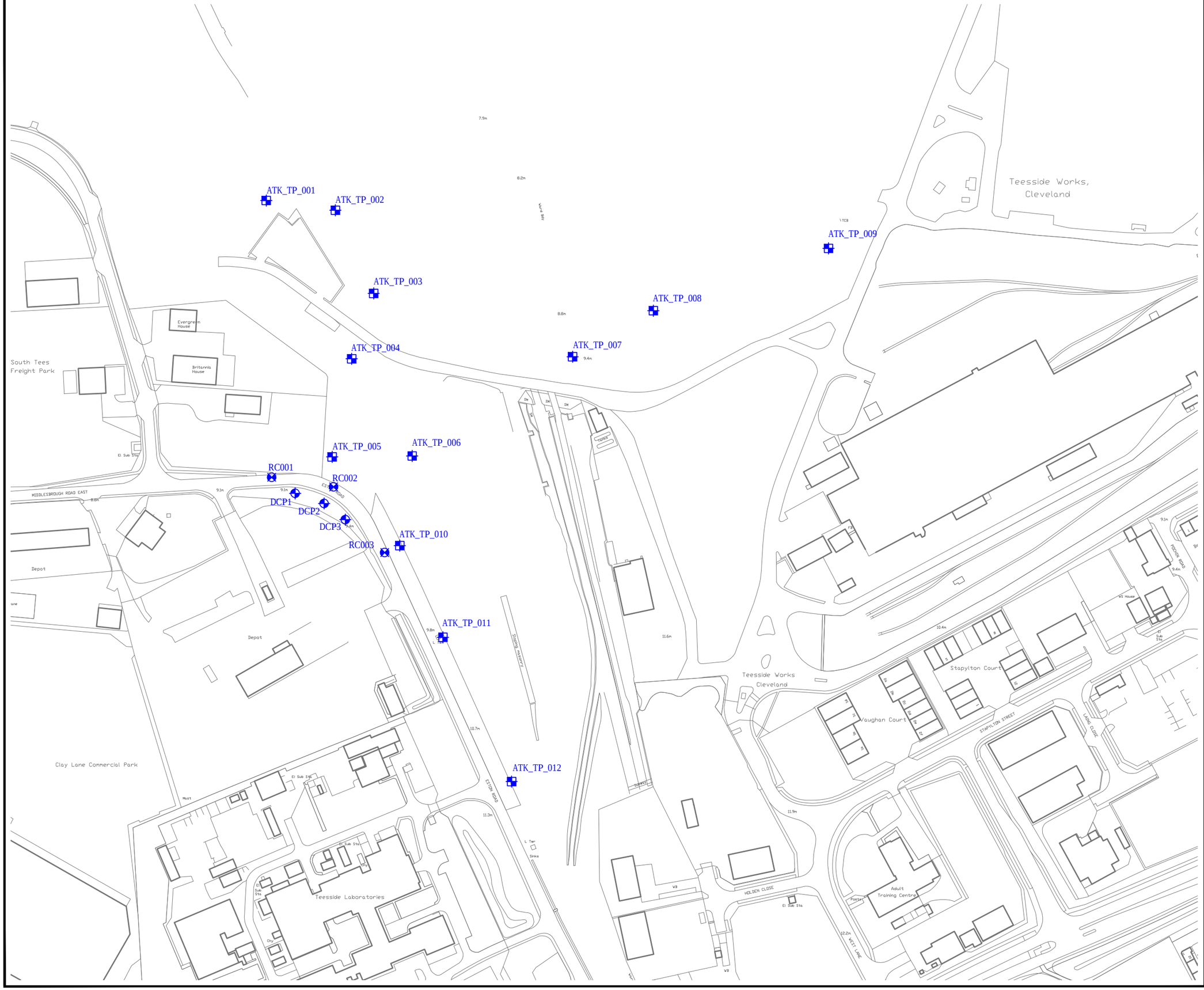

Coarse Grained


Medium Grained


Fine Grained

FIELD DATA ENCLOSURE 1

Exploratory Hole Location Plan



Allied Exporation and Geotechnics Limited

Unit 25 Stella Gill Industrial Estate
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(Email): enquiries@aeg.uk.net

KEY:

ROAD CORE

TRIAL PIT

DYNAMIC CONE PENETROMETER

N
W E
S

Base Plan Supplied by Consulting Engineer

Drawing Title:
ENC 01 : Exploratory Hole Location Plan

Drawing No.:
AEG/4287/01

Contract Title:
Eston Road Intrusive Works

Client:
Tees Valley Combined Authority

Consultant:
Arcadis
1 Whitehall Riverside,
Leeds, LS1 4BN

Contract No.:
4287

Scale:
1:2500 @ A3

Date:
21/09/2020

FIELD DATA ENCLOSURE 2

Road Core Hole Records

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454270.790 N:521077.157		**RC001**
Method (Equipment): Road Coring (Xcalibre Vulcan)	**Ground Level (m):** 9.362	**Start Date:** 15/06/2020	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (155mm)	100	9.32		0.045	5mm Hot Rolled Tarmacadam Surface Course (Binder = Bitumen, Aggregate = 30-40%, Aggregate = Dolerite, Estimated Voids = <1%), Layer Condition = Slightly Deteriorated).
		9.22		(0.095) 0.140	20mm Hot Rolled Asphalt Base Course (Binder = Tar, Aggregate = 60-70%, Aggregate = Slag and Basalt, Estimated Voids = <1%), Layer Condition = Fresh).
		9.18		0.185	10mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 60-70%, Aggregate = Basalt and possibly brick, Estimated Voids = <1%), Layer Condition = Fresh).
		9.14		0.220	20mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Slag, Estimated Voids = <1%), Layer Condition = Fresh).
		9.11		0.250	14mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 60-70%, Aggregate = Basalt, Estimated Voids = <1%), Layer Condition = Fresh).
		9.08		0.280	5mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 20-30%, Aggregate = Unknown, Estimated Voids = <1%), Layer Condition = Fresh).
		9.05		0.310	20mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Basalt, Estimated Voids = <1%), Layer Condition = Fresh).
		8.96		(0.090) 0.400	28mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 60-70%, Aggregate = Dolerite, Estimated Voids = <1%), Layer Condition = Fresh).
		8.88		(0.080) 0.480	40mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 60-70%, Aggregate = Slag, Estimated Voids = <1%), Layer Condition = Fresh).
		8.83		(0.050) 0.530	40mm Slag Bound Material Sub Base (Binder = Unknown, Aggregate = 70-80%, Aggregate = Slag, Layer Condition = Fragmented).
					Complete at 0.530m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
15/06/2020	0.00		0.00-0.53	Water	0.00-0.53	C1			
15/06/2020	0.53								

All dimensions in metres Scale 1:6.25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:25:38

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** RC001
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454270.790 N:521077.157		
Method (Equipment): Road Coring (Xcalibre Vulcan)	**Ground Level (m):** 9.362	**Start Date:** 15/06/2020	**Sheet:** 2 of 2

Figure RC001.1
RC001 - Core

Figure RC001.2
RC001 - Pit

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454314.661 N:521070.339		**RC002**
Method (Equipment): Road Coring (Xcalibre Vulcan)	**Ground Level (m):** 9.601	**Start Date:** 15/06/2020	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (155mm)	100	9.55		(0.050) 0.050	5mm Hot Rolled Tarmacadam Surface Course (Binder = Bitumen, Aggregate = 30-40%, Aggregate = Dolerite, Estimated Voids = <1%), Layer Condition = Slightly Deteriorated).
		9.42		(0.135) 0.185	28mm Hot Rolled Asphalt Base Course (Binder = Tar, Aggregate = 60-70%, Aggregate = Slag and Basalt, Estimated Voids = <1% (Max. Void Size = 2mm)), Layer Condition = Fresh).
		9.37		0.230	20mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Basalt and possibly brick, Estimated Voids = <1%), Layer Condition = Fresh).
		9.34		0.265	20mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Slag, Estimated Voids = <1%), Layer Condition = Fresh).
		9.27		(0.065) 0.330	28mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 60-70%, Aggregate = Basalt, Estimated Voids = <1%), Layer Condition = Fresh).
		9.22		(0.050) 0.380	5mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 20-30%, Aggregate = Unknown, Estimated Voids = <1%), Layer Condition = Fresh).
		9.13		(0.090) 0.470	40mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Basalt and Slag, Estimated Voids = <1%), Layer Condition = Slightly Deteriorated).
					Complete at 0.470m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
15/06/2020	0.00		0.00-0.47	Water	0.00-0.47	C1			
15/06/2020	0.47								

All dimensions in metres Scale 1:6.25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:25:51

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- FINAL

Project: Eston Road Intrusive Works				**Exploratory Hole No.** RC002
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454314.661 N:521070.339			
Method (Equipment): Road Coring (Xcalibre Vulcan)		**Ground Level (m):** 9.601	**Start Date:** 15/06/2020	**Sheet:** 2 of 2

Figure RC002.1
RC002 - Core

Figure RC002.2
RC002 - Pit

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454350.867 N:521023.884		**RC003**
Method (Equipment): Road Coring (Xcalibre Vulcan)	**Ground Level (m):** 9.812	**Start Date:** 15/06/2020	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (155mm)	100	9.77		0.040	10mm Hot Rolled Tarmacadam Surface Course (Binder = Bitumen, Aggregate = 30-40%, Aggregate = Dolerite, Estimated Voids = <1%), Layer Condition = Slightly Deteriorated).
		9.74		0.070	28mm Hot Rolled Asphalt Base Course (Binder = Tar, Aggregate = 60-70%, Aggregate = Slag and Dolerite, Estimated Voids = <1% (Max. Void Size = 2mm)), Layer Condition = Fresh).
		9.61		(0.130) 0.200	28mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Basalt, Estimated Voids = <1%), Layer Condition = Fresh).
		9.55		(0.060) 0.260	20mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Dolerite, Estimated Voids = <1%), Layer Condition = Fresh).
		9.52		0.290	5mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 20-30%, Aggregate = Unknown, Estimated Voids = <1%), Layer Condition = Fresh).
		9.41		(0.110) 0.400	40mm Stone Mastic Asphalt Base Course (Binder = Unknown, Aggregate = 50-60%, Aggregate = Basalt and Slag, Estimated Voids = <1%), Layer Condition = Slightly Deteriorated).
					Complete at 0.400m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
15/06/2020	0.00		0.00-0.40	Water	0.00-0.40	C1			
15/06/2020	0.40								

All dimensions in metres Scale 1:6.25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:26:04

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

ROAD CORE RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** RC003
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454350.867 N:521023.884		
Method (Equipment): Road Coring (Xcalibre Vulcan)	**Ground Level (m):** 9.812	**Start Date:** 15/06/2020	**Sheet:** 2 of 2

Figure RC003.1
RC003 - Core

Figure RC003.2
RC003 - Pit

FIELD DATA ENCLOSURE 3

Trial Pit Records

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

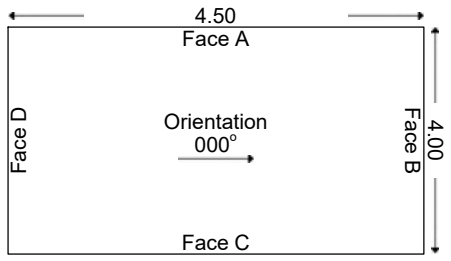
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454266.975 N:521273.000		**ATK_TP_001**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.363	**Start Date:** 19/06/2020	**Sheet:** 1 of 4

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				8.21		0.15	MADE GROUND (Compacted grey sandy gravel. Sand is fine to coarse and includes mainly concrete and ash. Gravel is fine to coarse subangular and includes slag and concrete. Slag content is 50-75%. Slag is grey vesicular).
0.20	J1					(1.55)	MADE GROUND (Grey brown sandy gravel with medium cobble content. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, concrete, brick, ash, metal and clinker. Slag content is 25-50%. Slag is grey vesicular. Cobbles are angular slag, red brick and concrete. Slag content is 0-25%. Slag is grey vesicular).
0.40	B2						
0.60	ES3						
1.20	J4						
1.40	B5			6.66		1.70	at c.0.60m BGL ... 610mm diameter cast iron pipe running 045 degrees. at c.1.40m BGL ... slightly sandy slightly gravelly clay with high cobble content.
2.20	J6					(0.90)	MADE GROUND (Grey brown clayey sandy gravel with medium to high cobble content and reworked grey brown soft silty clay bands. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, concrete, brick, ash, metal and clinker. Slag content is 25-50%. Slag is grey vesicular. Cobbles are angular and include slag, red brick and concrete. Slag content is 0-25%. Slag is grey vesicular). at c.2.60m BGL ... concrete slab/base.
2.60	B7			5.76		2.60	*Terminated at 2.60m BGL - due to encountering a concrete slab.*

PLAN



GROUNDWATER
Groundwater seepage at 2.10m BGL (Slow inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:04:18

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454266.975 N:521273.000		**ATK_TP_001**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.363	**Start Date:** 19/06/2020	**Sheet:** 2 of 4

Figure ATK_TP_001.1
ATK_TP_001 - Long Face

Figure ATK_TP_001.2
ATK_TP_001 - Long Face

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_001
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454266.975 N:521273.000		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.363	**Start Date:** 19/06/2020	**Sheet:** 3 of 4

Figure ATK_TP_001.3
ATK_TP_001 - Short Face

Figure ATK_TP_001.4
ATK_TP_001 - Short Face

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_001
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454266.975 N:521273.000		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.363	**Start Date:** 19/06/2020	**Sheet:** 4 of 4

Figure ATK_TP_001.5
ATK_TP_001 - Structures

Figure ATK_TP_001.6
ATK_TP_001 - Spoil

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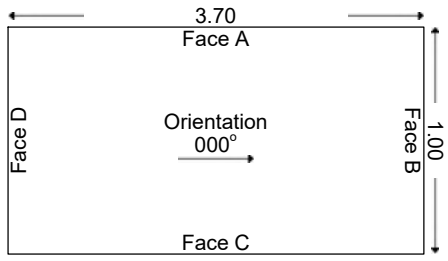
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454315.939 N:521266.141		**ATK_TP_002**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.153	**Start Date:** 18/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
0.30	J1			7.65		(0.50) 0.50	MADE GROUND (Compacted grey brown black clayey very sandy gravel. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red brick, ash, concrete. Slag content 25-50%. Slag is grey vesicular).
0.40	B2						
0.80	J3						MADE GROUND (Grey brown black sandy gravel with medium cobble content. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red brick, ash and concrete. Slag content is 0-25%. Slag is grey vesicular. Cobbles are angular and include slag, concrete, metal and wooden railway sleepers. Slag content is 25-50%. Slag is grey vesicular). at c.0.80m BGL ... 3.50m of railway track line removed.
1.30	B4					(1.10)	
1.40	ES5			6.55		1.60	
1.80	J6						Soft and friable grey mottled black silty CLAY gradually becoming firm brown grey slightly sandy silty CLAY with root fibers and sand lenses. Sand is fine to medium. Slight organic odour noted. at c.1.80m BGL ... clay is of high plasticity.
2.00	B7					(1.20)	
				5.35		2.80	
2.90	J8						Firm and friable laminated grey brown CLAY with silty lenses. at c.2.90m BGL ... clay is of intermediate plasticity.
3.00	ES9					(0.70)	
3.20	B10						
				4.65		3.50	
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:04:55

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_002
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454315.939 N:521266.141		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.153	**Start Date:** 18/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_002.1
ATK_TP_002 - Long Face

Figure ATK_TP_002.2
ATK_TP_002 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_002
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454315.939 N:521266.141		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.153	**Start Date:** 18/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_002.3
ATK_TP_002 - Spoil

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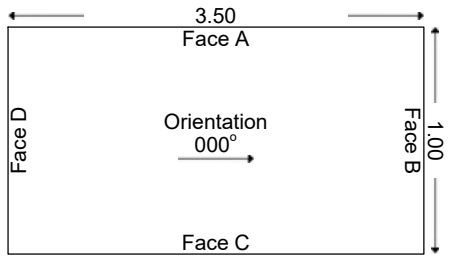
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454343.052 N:521207.258		**ATK_TP_003**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.493	**Start Date:** 18/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				7.99		(0.50) 0.50	MADE GROUND (Compacted grey brown black sandy gravel. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red brick, ash and concrete. Slag content is 0-25%. Slag is grey vesicular).
0.60	J1			7.39		(0.60) 1.10	MADE GROUND (Grey brown black sandy gravel with medium cobble content and fragments of metal. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red brick, ash and concrete. Slag content is 0-25%. Slag is grey vesicular. Cobbles are angular and include slag and concrete. Slag content is 0-25%. Slag is grey vesicular).
0.80	B2						
1.00	ES3						
1.40	J4						at c.0.90m BGL ... 76mm diameter cable located 1.00m from western edge of pit running 000 degrees.
1.60	B5			6.29		(1.10) 2.20	Soft and friable grey mottled black silty CLAY. Slight organic odour noted.
							at c.1.40m BGL ... clay is of intermediate plasticity.
2.30	J6			5.49		(0.80) 3.00	Firm brown grey slightly sandy silty CLAY with root fibers. Sand is fine to medium.
2.60	B7						
2.80	ES8						
3.10	J9			4.99		(0.50) 3.50	Firm and friable laminated grey brown CLAY with silty lenses.
3.30	B10						at c.3.10m BGL ... clay is of intermediate plasticity.
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:05:12

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454343.052 N:521207.258		**ATK_TP_003**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.493	**Start Date:** 18/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_003.1
ATK_TP_003 - Long Face

Figure ATK_TP_003.2
ATK_TP_003 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_003
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454343.052 N:521207.258		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.493	**Start Date:** 18/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_003.3
ATK_TP_003 - Spoil

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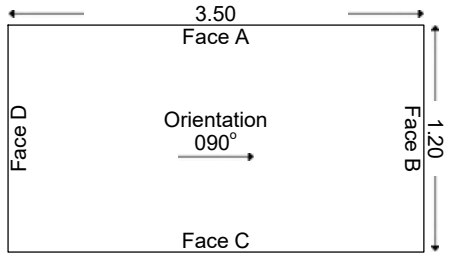
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454327.452 N:521160.998		**ATK_TP_004**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.811	**Start Date:** 18/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				8.51		0.30	MADE GROUND (Grey brown red sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes red brick, concrete and slag. Slag content is 25-50%. Slag is grey vesicular).
				8.31		0.50	MADE GROUND (Concrete with 10mm rebar).
0.80	J1					(1.10)	MADE GROUND (Grey green blue gravel and cobbles. Gravel is fine to coarse subangular and includes slag. Cobbles are subangular and include slag. Slag content is 75-100%. Slag is vesicular).
1.00	B2						
1.40	ES3		▼1	7.21		1.60	
1.80	J4					(0.60)	Soft and friable grey mottled black silty CLAY. Slight organic odour noted. at c.1.80m BGL ... clay is of intermediate plasticity.
2.10	B5			6.61		2.20	
2.40	J6					(1.30)	Firm brown grey slightly organic slightly sandy silty CLAY with root fibers. Sand is fine to medium.
2.60	B9						
2.80	ES10						
				5.31		3.50	
3.50	J11						*Complete at 3.50m BGL.*

PLAN



GROUNDWATER
Saturated strata at 1.60m BGL (Heavy inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION		
Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:05:30

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_004
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454327.452 N:521160.998		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.811	**Start Date:** 18/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_004.1
ATK_TP_004 - Long Face

Figure ATK_TP_004.2
ATK_TP_004 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_004
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454327.452 N:521160.998		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.811	**Start Date:** 18/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_004.3
ATK_TP_004 - Spoil

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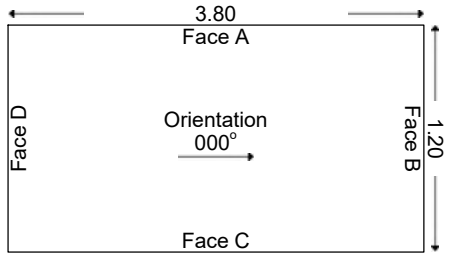
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454313.642 N:521091.599		**ATK_TP_005**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				9.18		0.30	MADE GROUND (Brown slightly clayey slightly gravelly sand with many rootlets. Sand is fine to coarse. Gravel is fine to medium subangular and includes brick and glass).
0.50	J1					(0.90)	MADE GROUND (Red brown black very clayey very sandy gravel with high cobble content and wood and metal fragments. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red brick, ash and concrete. Cobbles are angular and include slag and concrete. Slag content is 0-25%. Slag is grey vesicular).
0.80	B2						
1.00	ES3			8.28		1.20	at c.0.40m BGL ... 152mm diameter cast iron pipe at southern end of pit running 090 degrees (intact).
1.60	J4						at c.0.90m BGL ... 76mm diameter broken cable at northern end of pit running 090 degrees.
1.80	B5						Soft becoming firm brown grey slightly sandy CLAY. Sand is fine to medium.
2.20	J6					(2.30)	between c.1.20-2.00m BGL ... slight organic odour noted.
2.80	B7						at c.1.60m BGL ... clay is of intermediate plasticity.
2.90	ES8						
3.20	J9			5.98		3.50	
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:05:56

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_005
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454313.642 N:521091.599		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_005.1
ATK_TP_005 - Long Face

Figure ATK_TP_005.2
ATK_TP_005 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_005
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454313.642 N:521091.599		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_005.3
ATK_TP_005 - Spoil

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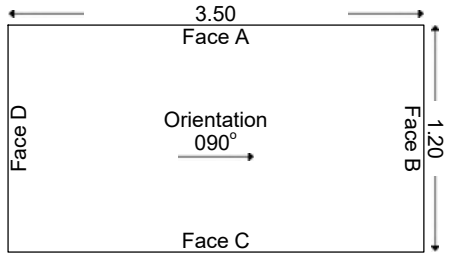
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454370.300 N:521092.263		**ATK_TP_006**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				9.33		0.15	MADE GROUND (Grey gravel. Gravel is fine to coarse subangular and includes slag, Slag content is 100%. Slag is vesicular).
0.20	J1			9.08		0.40	
0.30	B2						MADE GROUND (Grey brown black sandy gravel with medium cobble content and fragments of metal. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular slag, red brick, ash and concrete. Cobbles are angular and include slag and concrete. Slag content is 0-25%. Slag is vesicular).
0.60	J3					(0.80)	
0.80	B4						
0.90	ES5		1	8.28		1.20	
1.20	J6						MADE GROUND (Red orange brown sandy gravel. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular of clinker, concrete, red brick and slag. Slag content is 0-25%. Slag is vesicular).
1.40	B7					(0.70)	
				7.58		1.90	Soft and friable grey mottled black slightly sandy silty CLAY. Slight organic odour noted.
2.10	J8						at c.1.20m BGL ... clay/silt of high plasticity.
2.30	B9					(0.90)	Firm brown grey slightly sandy silty CLAY with root fibers. Sand is fine to medium.
2.50	ES10			6.68		2.80	at c.2.10m BGL ... clay is of intermediate plasticity.
2.90	J11						Firm and friable laminated grey brown CLAY with silty lenses.
3.00	B12					(0.70)	at c.2.90m BGL ... clay is of high plasticity.
				5.98		3.50	
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
Saturated strata at 1.20m BGL (Slight inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:06:14

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454370.300 N:521092.263		**ATK_TP_006**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_006.1
ATK_TP_006 - Long Face

Figure ATK_TP_006.2
ATK_TP_006 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_006
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454370.300 N:521092.263		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.475	**Start Date:** 18/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_006.3
ATK_TP_006 - Spoil

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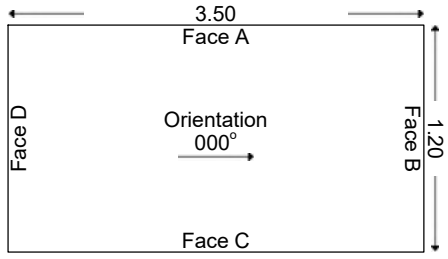
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454483.910 N:521162.451		**ATK_TP_007**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.143	**Start Date:** 16/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
0.20	J1			8.84		0.30	MADE GROUND (Compacted grey sandy gravel. Sand is fine to coarse and includes mainly concrete and ash. Gravel is fine to coarse subangular and includes slag and concrete. Slag content is 50-75%. Slag is grey vesicular).
0.40	J2			8.59		0.55	
0.50	B3					(0.45)	MADE GROUND (Grey brown clayey very sandy gravel with medium cobble content. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, concrete, brick, ash, dolomite and clinker. Slag content is 25-50%. Slag is grey vesicular. Cobbles are angular and includes slag and concrete. Slag content is 0-25%. Slag is grey vesicular).
0.60	J4						
0.70	B5						
0.90	ES6			8.14		1.00	
1.30	J7					(1.10)	MADE GROUND (Brown black sandy gravel with low to medium cobble content and metal and wood fragments. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes ash, clinker, coke and slag. Slag content is 25-50%. Slag is grey vesicular. Cobbles are angular and include concrete). at c.0.80m BGL ... 1No. 25mm diameter electric cable (broken) running 315 degrees (corner to corner) of pit inside a 152mm diameter clay pipe conduit, 2No. 76mm diameter electric cables (broken) running side by side 180 degrees centered in pit and 1No. 76mm diameter electric cable (broken) running 270 degrees at southern end of pit.
1.50	B8						
				7.04		2.10	
2.30	J9					(1.10)	
2.50	B10						
2.80	ES11						
				5.94		3.20	
3.30	J12			5.64		3.50	Soft brown interlaminated slightly sandy SILT and CLAY with silt lenses. at c.1.30m BGL ... clay is of low plasticity.
3.50	B13						Firm and friable brown grey slightly sandy CLAY. Sand is fine to medium. at c.2.30m BGL ... clay is of high plasticity.
							Firm and friable laminated grey brown CLAY. (Recovered in slab like layers). at c.3.30m BGL ... clay is of high plasticity.
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
Water ingress from 152mm diameter cable conduit. (Slight ingress).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:06:33

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454483.910 N:521162.451		**ATK_TP_007**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.143	**Start Date:** 16/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_007.1
ATK_TP_007 - Long Face

Figure ATK_TP_007.2
ATK_TP_007 - Short Face

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_007
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454483.910 N:521162.451		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 9.143	**Start Date:** 16/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_007.3
ATK_TP_007 - Spoil

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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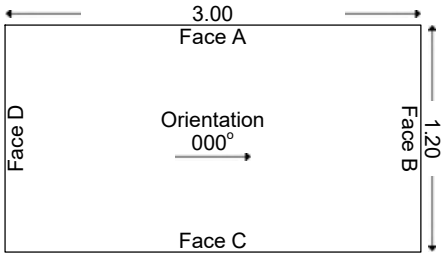
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454541.113 N:521195.031		**ATK_TP_008**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.741	**Start Date:** 16/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
0.40	J1					(0.90)	MADE GROUND (Black brown clayey very sandy gravel with medium cobble content. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, concrete, brick, ash, dolomite and clinker. Slag content is 25-50%. Slag is grey vesicular. Cobbles are angular and include slag, concrete and red brick. Slag content is 0-25%. Slag is grey vesicular).
0.80	B2		1	7.84		0.90	
1.00	ES2A					(0.40)	MADE GROUND (Yellow, red and brown sandy gravel with high cobble and medium boulder content and wood, metal girders and metal fragments. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red and yellow brick, ash and concrete. Cobbles are angular and include slag and concrete. Slag content is 0-25%. Slag is grey vesicular. Boulders are angular and include concrete).
1.20	J3			7.44		1.30	
1.30	B4						*Terminated at 1.30m BGL - due to encountering a concrete slab.*

PLAN



GROUNDWATER
Saturated strata at 0.90m BGL (Heavy inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:06:50

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454541.113 N:521195.031		**ATK_TP_008**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.741	**Start Date:** 16/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_008.1
ATK_TP_008 - Long Face

Figure ATK_TP_008.2
ATK_TP_008 - Short Face

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_008
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454541.113 N:521195.031		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.741	**Start Date:** 16/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_008.3
ATK_TP_008 - Spoil

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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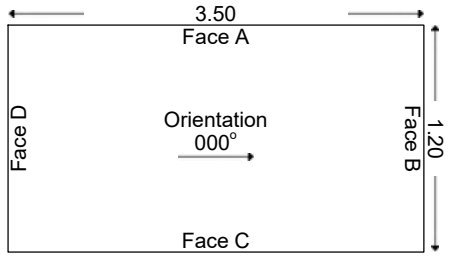
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454665.138 N:521239.157		**ATK_TP_009**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.999	**Start Date:** 17/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				8.80		0.20	MADE GROUND (Compacted grey sandy gravel. Sand is fine to coarse and includes mainly powdered concrete and ash. Gravel is fine to coarse subangular and includes concrete, slag and clinker. Slag content is 25-50%. Slag is grey vesicular).
0.20	J1					(0.40)	
0.40	B2						
0.50	ES3			8.40		0.60	
						(0.40)	MADE GROUND (Red, brown and black sandy gravel with high cobble and medium boulder content and fragments of wood, metal and metal railway track lines. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes slag, red and yellow brick, ash and concrete. Cobbles are angular and include slag and concrete. Slag content is 0-25%. Slag is grey vesicular. Boulders are angular and include concrete).
				8.00		1.00	
1.10	J4						MADE GROUND (Soft to firm brown grey mottled black slightly sandy clay with 229mm diameter square wooden piles (assumed to be piles) Sand is fine to medium. Slight hydrocarbon odour noted from wooden piles).
1.30	B5						
1.50	ES6						
2.10	J7					(2.50)	
2.30	B8						Firm and friable becoming stiff grey red slightly sandy slightly gravelly CLAY with occasional silty laminae. Sand is fine to medium. Gravel is fine to medium subangular and includes sandstone and mudstone.
							at c.1.10m BGL ... clay is of high plasticity.
							at c.2.30m BGL ... slightly sandy silty clay of intermediate plasticity.
3.10	J9						
3.30	B10						
				5.50		3.50	at c.3.30m BGL ... clay is of intermediate plasticity.
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
Saturated strata at 0.60m BGL (Slight inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:07:08

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_009
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454665.138 N:521239.157		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.999	**Start Date:** 17/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_009.1
ATK_TP_009 - Long Face

Figure ATK_TP_009.2
ATK_TP_009 - Short Face

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TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_009
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454665.138 N:521239.157		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 8.999	**Start Date:** 17/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_009.3
ATK_TP_009 - Spoil

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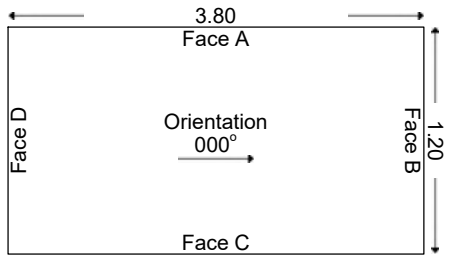
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454361.527 N:521028.809		**ATK_TP_010**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.192	**Start Date:** 17/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
0.30	J1			9.69		(0.50) 0.50	MADE GROUND (Grey gravel. Gravel is fine to coarse subangular to subrounded and includes slag. Slag content 100%. Slag is grey vesicular).
0.40	B2						
0.50	J3						
0.70	B4			9.19		(0.50) 1.00	MADE GROUND (Grey black sandy gravel. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes concrete, ash, clinker, red brick and slag. Slag content is 0-25%. Slag is grey vesicular).
0.90	ES5						
1.30	J6			7.99		(1.20) 2.20	MADE GROUND (Soft to firm brown grey mottled black slightly sandy silty clay with black silty sand and silt lenses. Sand is fine to medium). (Reworked material). at c.1.30m BGL ... slightly sandy clay/silt of high plasticity. at c.1.50m BGL ... sandy slightly gravelly silty clay.
1.50	B7						
1.60	ES8						
2.30	J9		1	7.39		(0.60) 2.80	MADE GROUND (Black clayey gravelly sand with frequent metal pipes, girders and rebar 20mm. Gravel is coarse angular and includes clinker and red brick).
2.50	B10						
3.00	J11			6.69		(0.70) 3.50	Firm friable and stiff red brown slightly sandy slightly gravelly silty CLAY with silty sand bands. Sand is fine to medium. Gravel is fine to medium subangular and includes mudstone and siltstone. at c.3.00m BGL ... clay is of intermediate plasticity. at c.3.20m BGL ... silty slightly sandy clay.
3.20	B12						
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
Saturated strata at 2.50m BGL (Slight inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:07:26

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_010
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454361.527 N:521028.809		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.192	**Start Date:** 17/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_010.1
ATK_TP_010 - Long Face

Figure ATK_TP_010.2
ATK_TP_010 - Short Face

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_010
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454361.527 N:521028.809		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.192	**Start Date:** 17/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_010.3
ATK_TP_010 - Spoil

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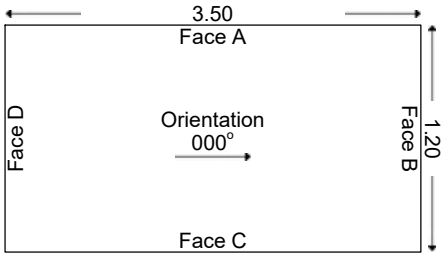
TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454392.106 N:520963.917		**ATK_TP_011**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.712	**Start Date:** 17/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				10.21		(0.50) 0.50	MADE GROUND (Grey gravel. Gravel is fine to coarse subangular to subrounded and includes slag. Slag content 100%. Slag is grey vesicular).
0.60 0.80 0.90	J1 B2 ES3		1	9.21		(1.00) 1.50	MADE GROUND (Yellow brown clayey sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes slag, concrete, clinker and red brick. Slag content is 50-75%. Slag is red/brown. Cobbles are angular and includes slag. Slag content is 75-100%. Slag is grey/red/brown and iron rich).
1.70 1.80	J4 B5					(2.00)	Soft to firm brown grey mottled black slightly sandy silty CLAY grading to firm and friable becoming stiff grey red brown sandy CLAY with occasional silty laminae. Sand is fine to medium. (Engineer notes wooden piles driven into upper section of clay (soft zone to approximately 2.20m BGL)). at c.1.70m BGL ... clay is of intermediate plasticity.
2.70 2.80	J6 B7			7.21		3.50	at c.2.80m BGL ... slightly sandy slightly gravelly silty clay.
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
Saturated strata at 0.90m BGL (Heavy inflow).

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION		
Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:07:44

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454392.106 N:520963.917		**ATK_TP_011**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.712	**Start Date:** 17/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_011.1
ATK_TP_011 - Long Face

Figure ATK_TP_011.2
ATK_TP_011 - Short Face

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_011
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454392.106 N:520963.917		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 10.712	**Start Date:** 17/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_011.3
ATK_TP_011 - Spoil

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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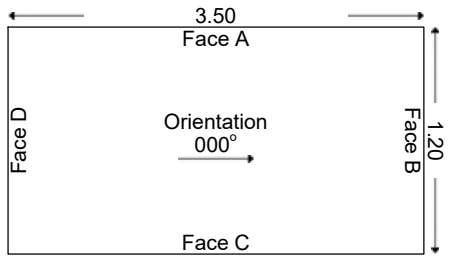
TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_012
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454440.721 N:520861.822		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 11.568	**Start Date:** 17/06/2020	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				11.27		0.30	MADE GROUND (Grey gravel. Gravel is fine to coarse subangular to subrounded and includes slag. Slag content is 100%. Slag is grey vesicular).
0.40	J1					(0.40)	
0.50	B2			10.87		0.70	MADE GROUND (Grey black sandy gravel. Sand is fine to coarse and includes mainly ash. Gravel is fine to coarse subangular and includes concrete, ash, clinker, red brick and slag. Slag content is 0-25%. Slag is grey vesicular).
0.90	J3						
1.20	B4					(1.10)	Soft to firm brown grey mottled black slightly sandy silty CLAY. Sand is fine to medium. (Possibly reworked). at c.0.90m BGL ... clay is of high plasticity.
1.40	ES5			9.77		1.80	
2.00	J6					(1.00)	Firm and friable becoming stiff grey red brown sandy CLAY with occasional silty laminae. Sand is fine to medium. at c.2.00m BGL ... clay is of intermediate plasticity.
2.30	B7			8.77		2.80	
2.80	HSV	105 (44)kPa				(0.70)	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium subangular and includes mudstone and siltstone. at c.2.90m BGL ... clay is of intermediate plasticity.
2.90	J8						
3.20	B9			8.07		3.50	
							Complete at 3.50m BGL.

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Material unsuitable for HSV testing between 0.00-2.80m BGL - too friable.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **4287**

Print Date and Time: 12/11/2020 09:08:01

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

TRIAL PIT RECORD

Status:- **FINAL**

Project: Eston Road Intrusive Works			**Exploratory Hole No.**
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454440.721 N:520861.822		**ATK_TP_012**
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 11.568	**Start Date:** 17/06/2020	**Sheet:** 2 of 3

Figure ATK_TP_012.1
ATK_TP_012 - Long Face

Figure ATK_TP_012.2
ATK_TP_012 - Short Face

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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TRIAL PIT RECORD

Status:- FINAL

Project: Eston Road Intrusive Works			**Exploratory Hole No.** ATK_TP_012
Client: South Tees Development Corporation	**Location:** Clay Lane Commercial Park E:454440.721 N:520861.822		
Method (Equipment): Machine Excavated (JCB 360 Tracked)	**Ground Level (m):** 11.568	**Start Date:** 17/06/2020	**Sheet:** 3 of 3

Figure ATK_TP_012.3
ATK_TP_012 - Spoil

FIELD DATA ENCLOSURE 4

Groundwater Observations Made at the Time of Site Works

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 01772 735 300 Fax: 01772 735 999

GROUNDWATER OBSERVATIONS MADE AT THE TIME OF SITE WORKS (WATER STRIKES)

Exploratory Hole No.	Date	Depth of Water (m)	Depth of Casing (m)	Depth Sealed (m)	Final Depth (m)	Total Time (mins)	Depth After 5 mins	Depth After 10 mins	Depth After 15 mins	Depth After 20 mins	Remarks
ATK_TP_004	18/06/2020	1.60									Saturated strata (heavy inflow).
ATK_TP_006	18/06/2020	1.20									Saturated strata (Slight inflow).
ATK_TP_008	16/06/2020	0.90									Saturated strata (heavy inflow).
ATK_TP_009	17/06/2020	0.60									Saturated strata (slight inflow).
ATK_TP_010	17/06/2020	2.50									Saturated strata (slight inflow).
ATK_TP_011	17/06/2020	0.90									Saturated strata (Heavy inflow).

Contract Title :- Eston Road Intrusive Works			Client :- South Tees Development Corporation	AEG Contract No :- 4287
Date of Issue :- 05/11/2020	Page No. :- 1 of 1	Checked By :- LC	Approved By :- KW	Certificate No. :- GWOWS/4287/1

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

GROUNDWATER OBSERVATIONS MADE AT THE TIME OF SITE WORKS (GROUNDWATER SEEPAGES)

Monitoring Point	Date	Depth (m)	Remarks
ATK_TP_001	19/06/2020	2.10	Slow Inflow

Contract Title :- Eston Road Intrusive Works	Client :- South Tees Development Corporation

Certificate No. :- GWOS/4287/1	Date of Issue :- 05/11/2020	Page No. :- 1 of 1	
Checked By :- LC	Approved By :- KW	AEG Contract No. :- 4287	

In-situ Test Report Certificate

IN-SITU TESTING ENCLOSURES

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG - Tel. 0191 3874700 Fax: 0191 3874710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL – Tel: 01254 503 200 Fax: 01254 662 590

IN-SITU TESTING REPORT CERTIFICATE

UKAS TESTING
1367

Contract Title: Eston Road Intrusive Works **AEG Reference:** 4287

Client Address: South Tees Development Corporation

I certify that *In-situ* testing was carried out on the above contract in accordance with techniques outlined in BS 1377: 1990: Part 9 or other appropriate standards as quoted, and the following results, given on the attached enclosures, were obtained.

The tests carried out are indicated in the attached table showing the enclosure number and the total number of pages.

For and on behalf of Allied Exploration & Geotechnics Limited

☐ Nick Vater (Managing Director)

☑ Kerry Wade (Technical Manager)

Signed KWade Date: 05 November 2020

Tests marked not UKAS accredited in this certificate are not included in the UKAS accreditation schedule for our laboratory. Any opinions and interpretations expressed herein are outside the scope of the laboratory's UKAS accreditation

IN-SITU TESTING REPORT CERTIFICATE

ENCLOSURES

Enclosure Number	Description	UKAS Accredited	Reference	No. of Pages
0	Test Report Certificate	N/A		2
-	Standard Penetration Test Results (SPT)	Yes	BS 1377 Part 9 1990	-
1	Hand Shear Vane Test Results	No		1
2	TRL Dynamic Cone Penetrometer Test Results	No	BS 5930 1999:Section 4	9
-	*In-situ* Water Quality Parameter Test Results	No		-
-	Density by Sand Replacement Method	Yes	BS 1377 Part 9 1990	-
-	Density by Core Cutter Method	Yes	BS 1377 Part 9 1990	-
-	Determination of the Vane Shear Strength (Down the Hole)	Yes	BS 1377 Part 9 1990	-
-	Shallow Pad (skip) Load Test Results	No	BS 1377 Part 9 1990	-
-	Determination of the California Bearing Ratio	Yes	BS 1377 Part 9 1990	-
-	Plate Loading Test Results	No	BS 1377 Part 9 1990	-
-	Apparent Resistivity of Soil	No	BS 1377 Part 9 1990	-
-	Redox Potential of Soil	No	BS 1377 Part 9 1990	-
-	Determination of the Soil Infiltration Rate for Soakaway Design	No	BRE Digest 365:1991	-

Hand Shear Vane Test Results

IN-SITU TESTING ENCLOSURE 1

ALLIED EXPLORATION & GEOTECHNICS LIMITED

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HAND SHEAR VANE TEST RESULTS

Exploratory Hole No.	Date	Depth m	1st Result kPa	2nd Result kPa	3rd Result kPa	Average kPa	Remarks
ATK_TP_012	17/06/2020	2.80	98 (44)	96	120	105 (44)	

Residual results given in brackets.

Contract Title :- Eston Road Intrusive Works			Client :- South Tees Development Corporation	AEG Contract No :- 4287
Date of Issue :- 05/11/2020	Page No. :- 1 of 1	Checked By :- LC	Approved By :- KW	Certificate No. :- HSV/4287/1

TRL Dynamic Cone Penetrometer Test Results

IN-SITU TESTING ENCLOSURE 2

ALLIED EXPLORATION & GEOTECHNICS LIMITED

TRL Dynamic Cone Penetrometer Testing

Probe Reference:	**DCP1**	
Date Tested:	**15/06/2020**	
Investigation Type:	TBC	
Method:	TRL Dynamic Cone Penetrometer	
Coordinates:		
Eastings (m):	454287.441	
Northings (m):	521065.772	
Level (m):	9.335	
Chainage (m):	TBC	
Probing Equipment Specification		
Hammer Mass:	8.00	kg
Drop Distance:	575.00	mm
Cone Angle:	30.00	Degrees
Tip Diameter:	20.00	mm
Operator Details		
Operator :	L. Hayes	
Supervisor :	D. Portsmouth	
Other Information		
Remarks	(1) mm/blows taken over 1 blow intervals in order to derive equivalent CBR value (%).	
Test Start Depth:	0.00	mm
Reference Reading:	0.00	mm
Total Readings:	36.00	
Total Depth:	2207.00	mm

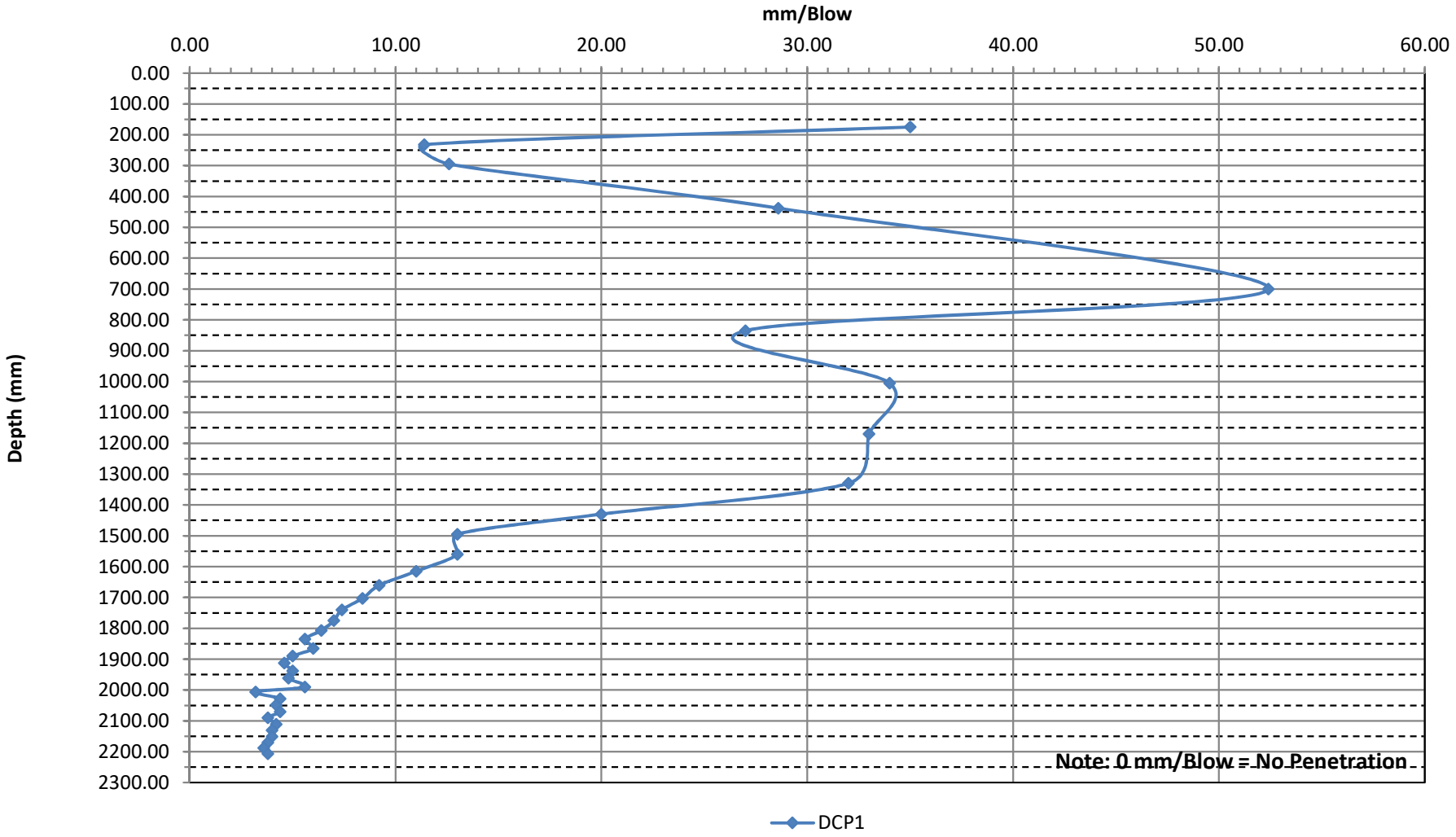
TRL Reading Index	No. of Blows	Start Depth (mm)	End Depth (mm)	Total Drive Penetration (mm)	TRL mm/Blow	Equivalent TRL CBR%
1	5.00	0.00	175.00	175	35.00	7.05
2	5.00	175.00	232.00	57	11.40	23.06
3	5.00	232.00	295.00	63	12.60	20.74
4	5.00	295.00	438.00	143	28.60	8.72
5	5.00	438.00	700.00	262	52.40	4.60
6	5.00	700.00	835.00	135	27.00	9.27
7	5.00	835.00	1005.00	170	34.00	7.26
8	5.00	1005.00	1170.00	165	33.00	7.50
9	5.00	1170.00	1330.00	160	32.00	7.75
10	5.00	1330.00	1430.00	100	20.00	12.73
11	5.00	1430.00	1495.00	65	13.00	20.07
12	5.00	1495.00	1560.00	65	13.00	20.07
13	5.00	1560.00	1615.00	55	11.00	23.95
14	5.00	1615.00	1661.00	46	9.20	28.93
15	5.00	1661.00	1703.00	42	8.40	31.84
16	5.00	1703.00	1740.00	37	7.40	36.41
17	5.00	1740.00	1775.00	35	7.00	38.61
18	5.00	1775.00	1807.00	32	6.40	42.45
19	5.00	1807.00	1835.00	28	5.60	48.88
20	5.00	1835.00	1865.00	30	6.00	45.45
21	5.00	1865.00	1890.00	25	5.00	55.10
22	5.00	1890.00	1913.00	23	4.60	60.18
23	5.00	1913.00	1938.00	25	5.00	55.10
24	5.00	1938.00	1962.00	24	4.80	57.53
25	5.00	1962.00	1990.00	28	5.60	48.88

Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020

26	5.00	1990.00	2006.00	16	3.20	88.32
27	5.00	2006.00	2028.00	22	4.40	63.08
28	5.00	2028.00	2049.00	21	4.20	66.26
29	5.00	2049.00	2071.00	22	4.40	63.08
30	5.00	2071.00	2090.00	19	3.80	73.65
31	5.00	2090.00	2111.00	21	4.20	66.26
32	5.00	2111.00	2131.00	20	4.00	69.76
33	5.00	2131.00	2151.00	20	4.00	69.76
34	5.00	2151.00	2170.00	19	3.80	73.65
35	5.00	2170.00	2188.00	18	3.60	77.98
36	5.00	2188.00	2207.00	19	3.80	73.65

ALLIED EXPLORATION & GEOTECHNICS LIMITED
TRL Dynamic Cone Penetrometer Testing

TRL DCP mm/Blow v Depth (mm)



Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020
Sheet: 3 of 9

ALLIED EXPLORATION & GEOTECHNICS LIMITED

TRL Dynamic Cone Penetrometer Testing

Probe Reference:	**DCP2**	
Date Tested:	**15/06/2020**	
Investigation Type:	TBC	
Method:	TRL Dynamic Cone Penetrometer	
Coordinates:		
Eastings (m):	454307.983	
Northings (m):	521058.651	
Level (m):	9.270	
Chainage (m):	TBC	
Probing Equipment Specification		
Hammer Mass:	8.00	kg
Drop Distance:	575.00	mm
Cone Angle:	30.00	Degrees
Tip Diameter:	20.00	mm
Operator Details		
Operator :	L. Hayes	
Supervisor :	D. Portsmouth	
Other Information		
Remarks	(1) mm/blows taken over 1 blow intervals in order to derive equivalent CBR value (%).	
Test Start Depth:	0.00	mm
Reference Reading:	0.00	mm
Total Readings:	27.00	
Total Depth:	2019.00	mm

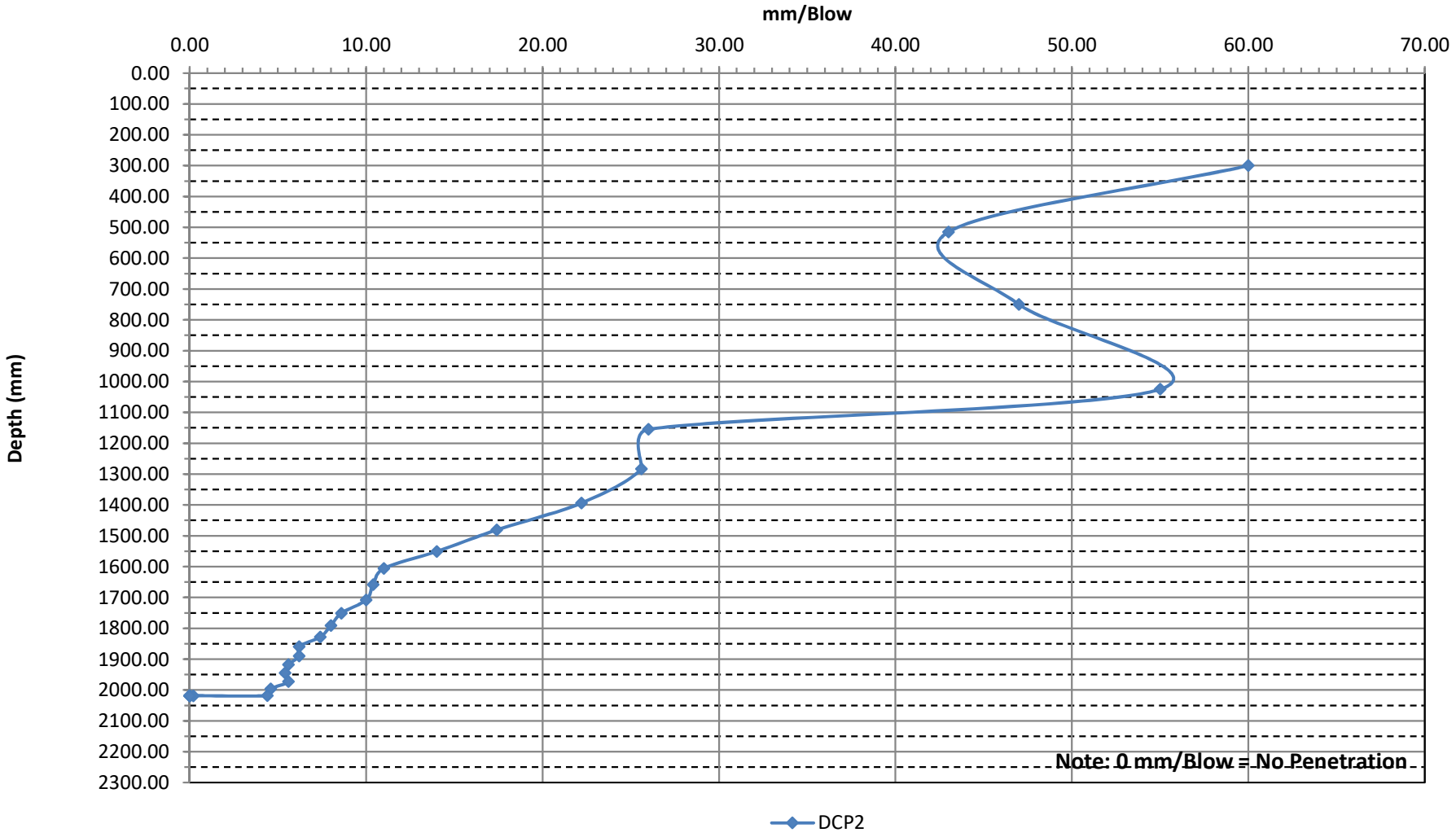
TRL Reading Index	No. of Blows	Start Depth (mm)	End Depth (mm)	Total Drive Penetration (mm)	TRL mm/Blow	Equivalent TRL CBR%
1	5.00	0.00	300.00	300	60.00	3.99
2	5.00	300.00	515.00	215	43.00	5.67
3	5.00	515.00	750.00	235	47.00	5.16
4	5.00	750.00	1025.00	275	55.00	4.37
5	5.00	1025.00	1155.00	130	26.00	9.65
6	5.00	1155.00	1283.00	128	25.60	9.81
7	5.00	1283.00	1394.00	111	22.20	11.40
8	5.00	1394.00	1481.00	87	17.40	14.75
9	5.00	1481.00	1551.00	70	14.00	18.56
10	5.00	1551.00	1606.00	55	11.00	23.95
11	5.00	1606.00	1658.00	52	10.40	25.41
12	5.00	1658.00	1708.00	50	10.00	26.49
13	5.00	1708.00	1751.00	43	8.60	31.06
14	5.00	1751.00	1791.00	40	8.00	33.53
15	5.00	1791.00	1828.00	37	7.40	36.41
16	5.00	1828.00	1859.00	31	6.20	43.90
17	5.00	1859.00	1890.00	31	6.20	43.90
18	5.00	1890.00	1918.00	28	5.60	48.88
19	5.00	1918.00	1945.00	27	5.40	50.80
20	5.00	1945.00	1973.00	28	5.60	48.88
21	5.00	1973.00	1996.00	23	4.60	60.18
22	5.00	1996.00	2018.00	22	4.40	63.08
23	5.00	2018.00	2018.00	0	0.00	-
24	5.00	2018.00	2019.00	1	0.20	1655.05
25	5.00	2019.00	2019.00	0	0.00	-

Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020

26	5.00	2019.00	2019.00	0	0.00	-
27	5.00	2019.00	2019.00	0	0.00	-

ALLIED EXPLORATION & GEOTECHNICS LIMITED
TRL Dynamic Cone Penetrometer Testing

TRL DCP mm/Blow v Depth (mm)



Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020
Sheet: 6 of 9

ALLIED EXPLORATION & GEOTECHNICS LIMITED

TRL Dynamic Cone Penetrometer Testing

Probe Reference:	**DCP3**	
Date Tested:	**15/06/2020**	
Investigation Type:	TBC	
Method:	TRL Dynamic Cone Penetrometer	
Coordinates:		
Eastings (m):	454322.976	
Northings (m):	521047.171	
Level (m):	9.382	
Chainage (m):	TBC	
Probing Equipment Specification		
Hammer Mass:	8.00	kg
Drop Distance:	575.00	mm
Cone Angle:	30.00	Degrees
Tip Diameter:	20.00	mm
Operator Details		
Operator :	L. Hayes	
Supervisor :	D. Portsmouth	
Other Information		
Remarks	(1) mm/blows taken over 1 blow intervals in order to derive equivalent CBR value (%).	
Test Start Depth:	0.00	mm
Reference Reading:	0.00	mm
Total Readings:	26.00	
Total Depth:	2306.00	mm

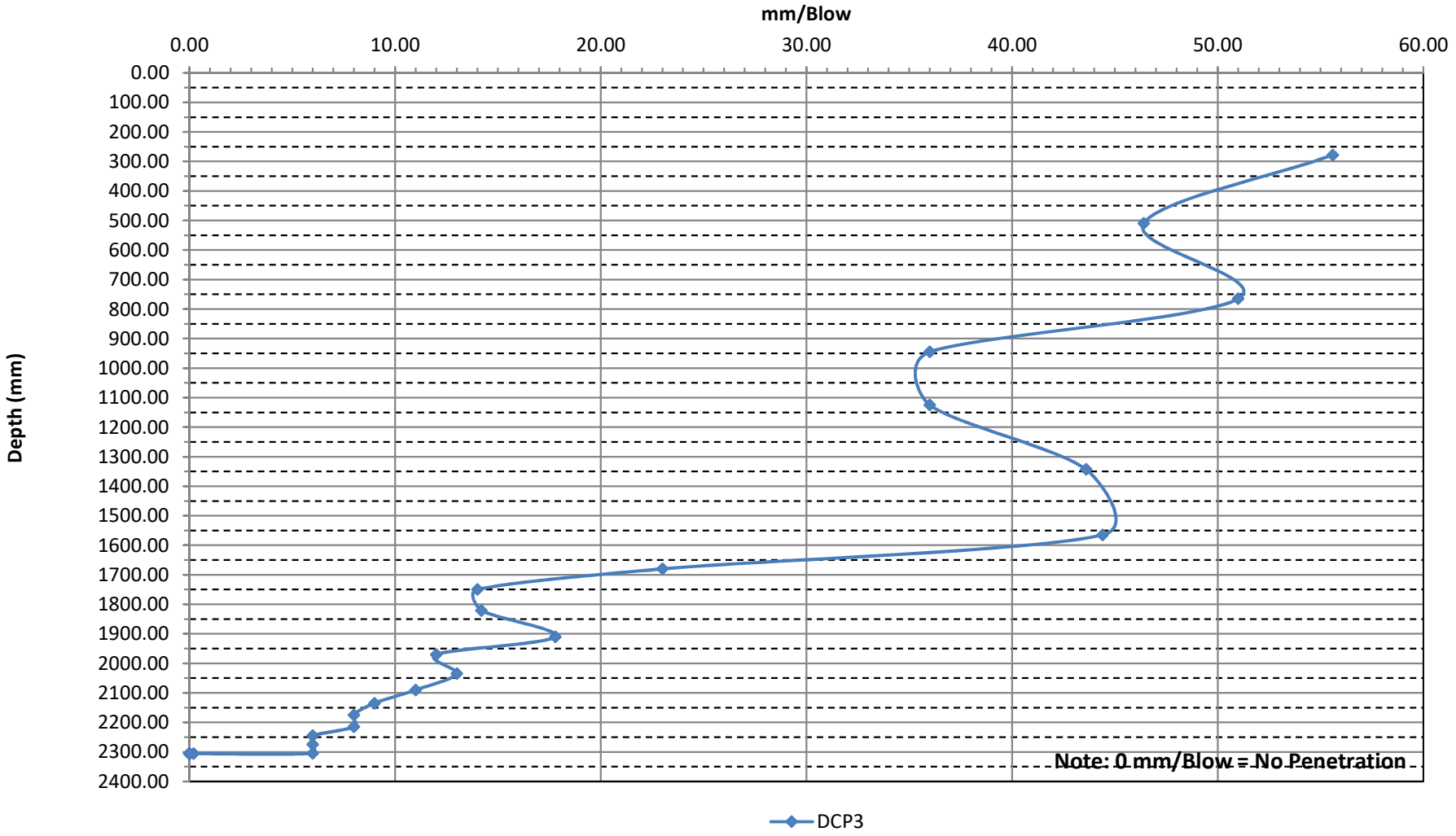
TRL Reading Index	No. of Blows	Start Depth (mm)	End Depth (mm)	Total Drive Penetration (mm)	TRL mm/Blow	Equivalent TRL CBR%
1	5.00	0.00	278.00	278	55.60	4.32
2	5.00	278.00	510.00	232	46.40	5.23
3	5.00	510.00	765.00	255	51.00	4.73
4	5.00	765.00	945.00	180	36.00	6.84
5	5.00	945.00	1125.00	180	36.00	6.84
6	5.00	1125.00	1343.00	218	43.60	5.59
7	5.00	1343.00	1565.00	222	44.40	5.48
8	5.00	1565.00	1680.00	115	23.00	10.98
9	5.00	1680.00	1750.00	70	14.00	18.56
10	5.00	1750.00	1821.00	71	14.20	18.28
11	5.00	1821.00	1910.00	89	17.80	14.40
12	5.00	1910.00	1970.00	60	12.00	21.84
13	5.00	1970.00	2035.00	65	13.00	20.07
14	5.00	2035.00	2090.00	55	11.00	23.95
15	5.00	2090.00	2135.00	45	9.00	29.61
16	5.00	2135.00	2175.00	40	8.00	33.53
17	5.00	2175.00	2215.00	40	8.00	33.53
18	5.00	2215.00	2245.00	30	6.00	45.45
19	5.00	2245.00	2275.00	30	6.00	45.45
20	5.00	2275.00	2305.00	30	6.00	45.45
21	5.00	2305.00	2306.00	1	0.20	1655.05
22	5.00	2306.00	2306.00	0	0.00	-
23	5.00	2306.00	2306.00	0	0.00	-
24	5.00	2306.00	2306.00	0	0.00	-
25	5.00	2306.00	2306.00	0	0.00	-

Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020

26	5.00	2306.00	2306.00	0	0.00	-

ALLIED EXPLORATION & GEOTECHNICS LIMITED
TRL Dynamic Cone Penetrometer Testing

TRL DCP mm/Blow v Depth (mm)



Contract: Eston Road Instrusive Works
Contract No.: 4287
Date: 22/09/2020
Sheet: 9 of 9

Laboratory Report Certificate

LABORATORY TESTING ENCLOSURES

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG - Tel: 0191 3874700 Fax: 0191 3874710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL – Tel: 01722 735 300 Fax: 01722 735 999

LABORATORY REPORT CERTIFICATE

UKAS TESTING
1367

Contract Title: Eston Road Intrusive Works **AEG Reference:** 4287

Client: South Tees Development Corporation

We certify that Laboratory testing was carried out on samples from the above contract in accordance with techniques outlined in BS 1377: 1990, BS EN ISO 17892:2014 or other appropriate standards as quoted. The samples were received from June 2020 and the following results, given on the attached enclosures, were obtained.

The tests carried out are indicated in the attached table showing the enclosure number and the total number of pages.

For and on behalf of Allied Exploration & Geotechnics Limited

- ☐ Nick Vater (Managing Director)
- ☐ Kevin Warriner (HSE & Quality Director)
- ☑ Michelle Selkirk (Laboratory Manager)

Signed MSelk Date: 06 November 2020

Tests marked not UKAS accredited in this certificate are not included in the UKAS accreditation schedule for our laboratory. Any opinions and interpretations expressed herein are outside the scope of the laboratory's UKAS accreditation.

Please note the material was derived from samples taken outside the control of the laboratory.

LABORATORY REPORT CERTIFICATE

ENCLOSURES

Enclosure Number	Description	UKAS Accredited	Reference	No. of Pages
0	Laboratory Report Certificate	N/A		3
1	Sample Description Sheets	N/A		3
2	Moisture Content	Yes	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)	1
2	Plasticity Index and Moisture Content	Yes	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)	3
3	Determination of Particle Density	Yes	BS 1377 Part 2 1990	1
4	Particle Size Distribution Sieving	Yes	BS 1377 Part 2 1990	19
4	Particle Size Distribution Sedimentation	No	BS 1377 Part 2 1990	11
5	Determination of Organic Matter Content, Sulphate and pH (Tested externally)	No	See DETS certificates	5
6	Determination of Dry Density/Moisture Content Relationship	Yes	BS 1377 Part 4 1990	7
7	Determination of California Bearing Ratio	Yes	BS 1377 Part 4 1990	15

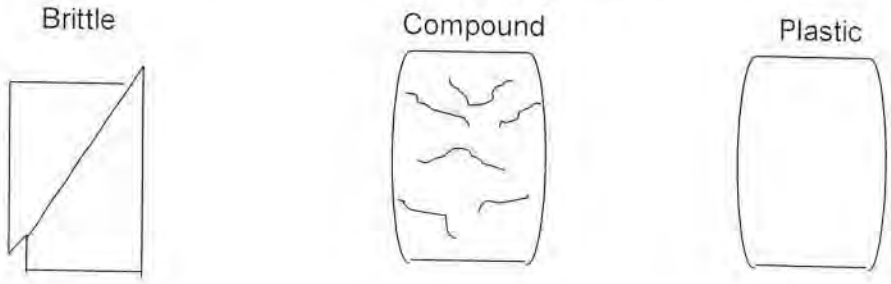
LABORATORY REPORT CERTIFICATE

ABBREVIATIONS

All the abbreviations used on the laboratory certificates are given below:

Br	Brittle	**PSD**	Particle Size Distribution by sieve analysis
C	Compound	**SB**	Shear Box
CBR	California Bearing Ratio	**SED**	Sedimentation Analysis
CDT	Consolidated Drained Triaxial	**SO4**	Sulphate (total, water extract, groundwater)
CL	Chloride content (water or soil)	**CP2**	Dry Density/Moisture Content 2.5kg rammer
US	Unsuitable sample for test	**CP4**	As above using 4.5kg rammer
UUT	Undrained Unconsolidated Triaxial	**CPV**	As above using vibrating hammer
HSV	Vane Test	**CUT**	Consolidated Undrained Triaxial
IS	Insufficient sample for test	**R**	Remoulded
LOI	Loss On Ignition	**U**	Undisturbed
M	Multi-stage testing	**MC**	Moisture Content
MCV	Moisture Content Value	**PL**	Point Load
NAT	Natural preparation method	**NMC**	Natural (or as received) moisture content
P	Plastic	**PFH**	Permeability Falling Head Method
OED	Oedometer	**PTXL**	Permeability in Triaxial Cell
OMC	Optimum Moisture Content	**ORG**	Organic content
B	Large disturbed (bulk) sample	**PD**	Particle Density (SG)
J	Small disturbed (jar) sample	**PI**	Liquid limit, plastic limit and plasticity index

Typical Mode of Failure for Triaxial Testing



Sample Description Sheets

LABORATORY TESTING ENCLOSURE 1

ALLIED EXPLORATION & GEOTECHNICS LIMITED

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG - **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - **Tel:** 01772 735 300 **Fax:** 01772 735 999

LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth (m)	ID	Description	Laboratory Tests/Remarks
ATK_TP_001	1.40	B5	MADE GROUND (Brown slightly sandy slightly gravelly clay with a high cobble content. Gravel includes brick fragments).	PSD PD CP2 CBR
ATK_TP_001	2.60	B7	MADE GROUND (Dark brown/grey clayey sandy gravel with a low cobble content. Gravel includes glass, metal, clinker, ash, concrete, slag and brick fragments).	BRE
ATK_TP_002	0.40	B2	MADE GROUND (Black clayey very sandy gravel including brick fragments).	PSD CBR
ATK_TP_002	1.80	J6	Dark grey brown silty slightly sandy CLAY of high plasticity.	MC PI ORG
ATK_TP_002	2.00	B7	Brown slightly sandy CLAY.	CP2 Soaked CBR
ATK_TP_002	2.90	J8	Light brown silty slightly sandy CLAY of intermediate plasticity.	MC PI
ATK_TP_003	1.40	J4	Light brown slightly sandy CLAY of intermediate plasticity.	MC PI
ATK_TP_003	1.60	B5	Brown sandy CLAY.	Soaked CBR
ATK_TP_003	3.10	J9	Brown silty slightly sandy CLAY of intermediate plasticity.	MC PI
ATK_TP_003	3.30	B10	Fissured brown mottled silty CLAY.	Soaked CBR
ATK_TP_004	1.00	B2	MADE GROUND (Grey cobbles with some gravel. Gravel and cobbles includes slag).	PSD US for CP2
ATK_TP_004	1.80	J4	Friable dark brown slightly sandy CLAY of intermediate plasticity.	MC PI ORG
ATK_TP_004	2.10	B5	Brown slightly organic silty slightly sandy CLAY.	PSD SED
ATK_TP_005	0.80	B2	MADE GROUND (Blackish brown very clayey very sandy gravel with occasional clay pockets. Gravel includes concrete and slag).	PSD SED PD CP2 CBR
ATK_TP_005	1.60	J4	Light brown slightly sandy CLAY of intermediate plasticity.	MC PI ORG
ATK_TP_005	1.80	B5	Brown slightly sandy CLAY.	CBR
ATK_TP_006	0.30	B2	MADE GROUND (Grey sandy gravel with a medium cobble content. Gravel includes slag and clinker).	PSD US for CP2
ATK_TP_006	1.20	J6	Friable brown slightly sandy CLAY/SILT of high plasticity.	MC PI
ATK_TP_006	1.40	B7	Brown silty slightly sandy CLAY.	PSD SED CP2
ATK_TP_006	2.10	J8	Friable dark brown silty slightly sandy CLAY of intermediate plasticity.	MC PI
ATK_TP_006	2.30	B9	Brown with grey veining silty CLAY.	PSD Soaked CBR

Contract Title :-	Client :-
Eston Road Intrusive Works	South Tees Development Corporation

Signed :- MSMP	Name :- [illegible]	Page 1 of 3	UKAS TESTING 1367
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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth (m)	ID	Description	Laboratory Tests/Remarks
ATK_TP_006	2.90	J11	Laminated light brown silty slightly sandy CLAY of high plasticity.	MC PI BRE ORG
ATK_TP_006	3.00	B12	Fissured brown/grey silty CLAY.	Soaked CBR
ATK_TP_007	0.50	B3	Blackish brown clayey very sandy GRAVEL.	MC PSD CBR
ATK_TP_007	0.70	B5	Blackish brown slightly clayey gravelly SAND.	BRE CP4
ATK_TP_007	1.30	J7	Light brown silty sandy CLAY of low plasticity.	MC PI
ATK_TP_007	1.50	B8	Brown with grey mottling silty slightly sandy CLAY.	PSD SED
ATK_TP_007	2.30	J9	Greyish brown CLAY of high plasticity.	MC PI
ATK_TP_007	2.50	B10	Brown slightly sandy CLAY.	BRE PSD SED
ATK_TP_007	3.30	J12	Laminated dark brown CLAY of high plasticity.	MC PI
ATK_TP_007	3.50	B13	Fissured brown CLAY.	PSD PD BRE
ATK_TP_008	0.80	B2	MADE GROUND (Black clayey very sandy gravel including slag, plastic and ceramic fragments).	PSD US for CBR
ATK_TP_009	1.10	J4	Dark brown with occasional grey mottling CLAY of high plasticity.	MC PI BRE ORG
ATK_TP_009	1.30	B5	Grey brown slightly sandy slightly gravelly CLAY.	BRE PSD SED CBR
ATK_TP_009	2.30	B8	Fissured brown silty slightly sandy CLAY of intermediate plasticity.	MC PI PSD SED
ATK_TP_009	3.30	B10	Fissured brown silty slightly sandy CLAY of intermediate plasticity.	MC PI BRE
ATK_TP_010	0.40	B2	MADE GROUND (Dark grey/black sandy gravel including slag, concrete and ash).	BRE
ATK_TP_010	1.30	J6	Dark brown slightly sandy CLAY/SILT of high plasticity.	MC PI
ATK_TP_010	1.50	B7	Greyish brown silty sandy slightly gravelly CLAY.	PSD SED CP2 CBR
ATK_TP_010	3.00	J11	Brown silty CLAY of intermediate plasticity.	MC PI
ATK_TP_010	3.20	B12	Brown silty slightly sandy CLAY	BRE PSD SED CBR
ATK_TP_011	0.80	B2	Brown clayey slightly sandy GRAVEL with a high cobble content.	US for CBR

Contract Title :-	Client :-
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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth (m)	ID	Description	Laboratory Tests/Remarks
ATK_TP_011	1.70	J4	Light brown CLAY of intermediate plasticity.	MC PI
ATK_TP_011	1.80	B5	Brown slightly sandy slightly gravelly CLAY.	BRE CBR
ATK_TP_011	2.70	J6	Brown with grey mottling slightly sandy CLAY.	MC
ATK_TP_011	2.80	B7	Brown with grey veining silty slightly sandy slightly gravelly CLAY.	PSD SED
ATK_TP_012	0.50	B2	MADE GROUND (Dark grey slightly clayey sandy gravel including slag, clinker, ash and brick fragments).	BRE
ATK_TP_012	0.90	J3	Brown with grey veining CLAY of high plasticity.	MC PI ORG
ATK_TP_012	1.20	B4	Brown silty slightly sandy CLAY.	PSD SED CP2
ATK_TP_012	2.00	J6	Brown silty CLAY of intermediate plasticity.	MC PI
ATK_TP_012	2.30	B7	Brown with grey mottling slightly sandy CLAY.	CBR
ATK_TP_012	2.90	J8	Brown with grey veining CLAY of intermediate plasticity.	MC PI
ATK_TP_012	3.20	B9	Brown with grey veining slightly sandy slightly gravelly CLAY.	BRE

Contract Title :- Eston Road Intrusive Works

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Name :-

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UKAS TESTING 1367

LABORATORY TESTING ENCLOSURE 2

Moisture Content/Plasticity Index and Moisture Content

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MOISTURE CONTENT CERTIFICATE

BS 1377 : Part 2 : Clause 3.2

Exploratory Hole No.	Sample Depth (m)	Sample ID	Specific Depth (m)	Moisture Content (%)	Date Tested	Remarks
ATK_TP_011	2.70	J6	2.70	16.0	03/08/2020	

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :- Eston Road Intrusive Works	Client :- South Tees Development Corporation

Signed :- MSeq	Name :- M. SELKIRK	Page 1 of 1	
Date of issue :- 05/11/2020	Certificate No :- MC/4287/1	AEG Contract No. :- 4287	UKAS TESTING 1367

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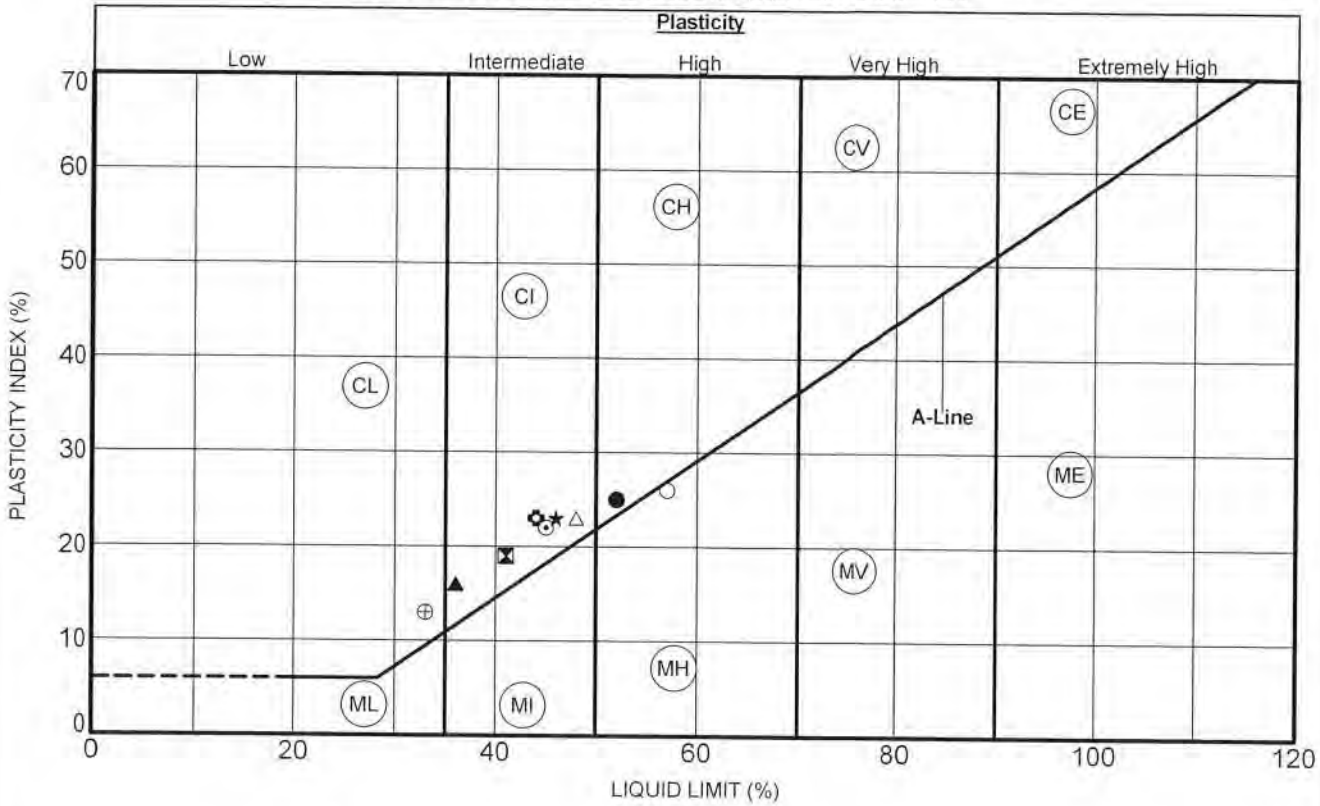
ATTERBERG LIMITS & NATURAL MOISTURE CONTENT

Test Method :- BS 1377 : Part 2 : Clause 3.2, 4.1 to 4.4 & 5 : 1990



Exploratory Hole No.	Depth (m)	Sample Type/Ref.	Specific Depth (m)	LL	PL	PI	I_L	Preparation Method	<0.425mm (%)	m/c (%)	Date Tested
●ATK_TP_002	1.80	J6	1.80	52	27	25	0.23	Natural		32.8	03/08/2020
⧗ATK_TP_002	2.90	J8	2.90	41	22	19	0.35	Natural		28.6	03/08/2020
▲ATK_TP_003	1.40	J4	1.40	36	20	16	0.16	Natural		22.6	03/08/2020
★ATK_TP_003	3.10	J9	3.10	46	23	23	0.31	Natural		30.2	03/08/2020
⊙ATK_TP_004	1.80	J4	1.80	45	23	22	0.10	Natural		25.1	03/08/2020
✿ATK_TP_005	1.60	J4	1.60	44	21	23	0.22	Natural		26.1	03/08/2020
○ATK_TP_006	1.20	J6	1.20	57	31	26	-0.02	Natural		30.5	03/08/2020
△ATK_TP_006	2.10	J8	2.10	48	25	23	0.06	Natural		26.4	03/08/2020
⊗ATK_TP_006	2.90	J11	2.90	52	27	25	0.12	Natural		29.9	03/08/2020
⊕ATK_TP_007	1.30	J7	1.30	33	20	13	0.28	Natural		23.7	03/08/2020

For description of sample please refer to the Laboratory Sample Description Sheet. # = Insufficient for 4 point PI
If sample is prepared in the natural state we are unable to determine % retained on the 0.425mm test sieve.

Contract Title :-	Client :-
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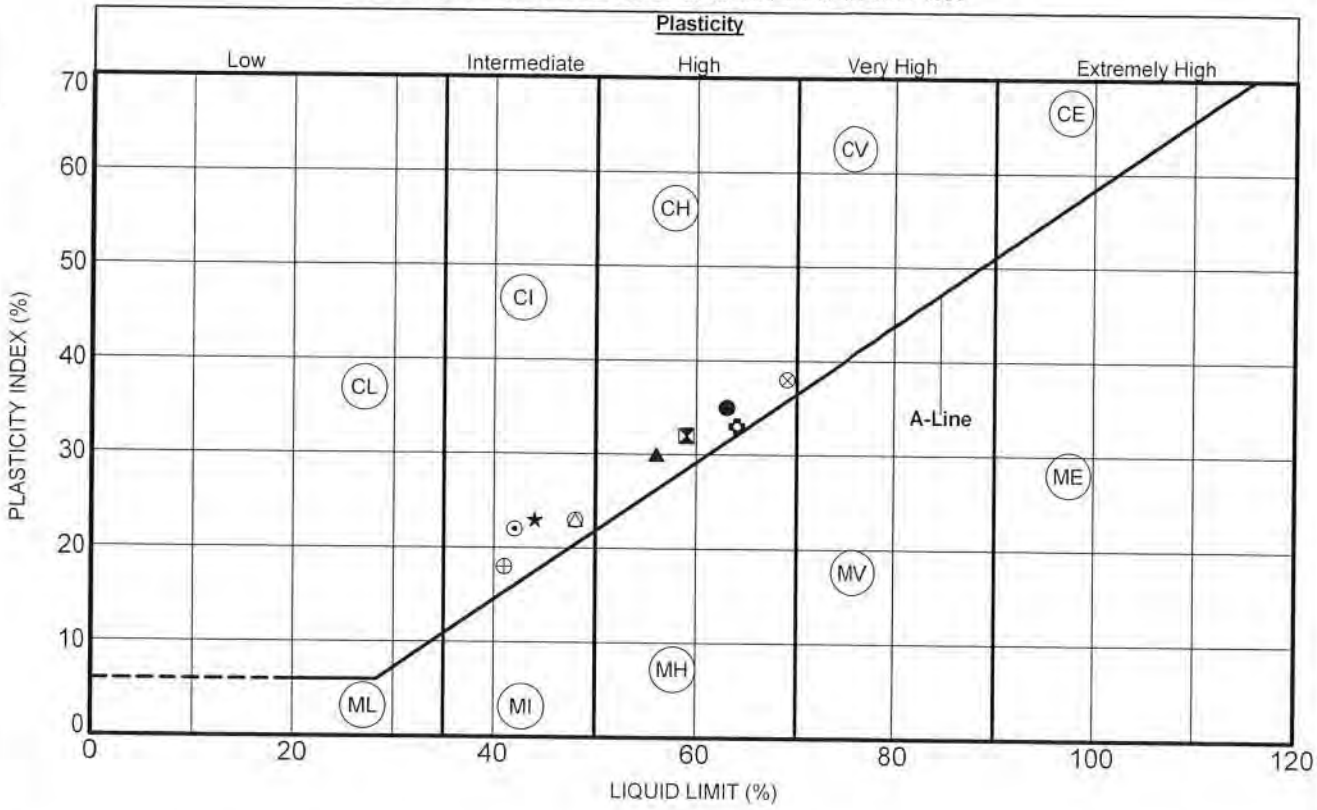
ATTERBERG LIMITS & NATURAL MOISTURE CONTENT

Test Method :- BS 1377 : Part 2 : Clause 3.2, 4.1 to 4.4 & 5 : 1990



Exploratory Hole No.	Depth (m)	Sample Type/Ref.	Specific Depth (m)	LL	PL	PI	I_L	Preparation Method	<0.425mm (%)	m/c (%)	Date Tested	
●ATK_TP_007	2.30	J9	2.30	63	28	35	0.14	Natural		32.9	03/08/2020	
⧗ATK_TP_007	3.30	J12	3.30	59	27	32	0.10	Natural		30.2	03/08/2020	
▲ATK_TP_009	1.10	J4	1.10	56	26	30	0.05	Natural		27.6	03/08/2020	
★ATK_TP_009	2.30	B8	2.30	44	21	23	0.18	Natural	98.0	25.2	18/08/2020	
⊙ATK_TP_009	3.30	B10	3.30	42	20	22	0.22	Natural		24.8	18/08/2020	
✿ATK_TP_010	1.30	J6	1.30	64	31	33	0.40	Natural		44.1	03/08/2020	
○ATK_TP_010	3.00	J11	3.00	48	25	23	0.00	Natural		24.9	03/08/2020	
△ATK_TP_011	1.70	J4	1.70	48	25	23	0.33	Natural		32.5	03/08/2020	
⊗ATK_TP_012	0.90	J3	0.90	69	31	38	0.09	Natural		34.3	03/08/2020	#
⊕ATK_TP_012	2.00	J6	2.00	41	23	18	0.09	Natural		24.6	18/08/2020	

For description of sample please refer to the Laboratory Sample Description Sheet. # = Insufficient for 4 point PI
If sample is prepared in the natural state we are unable to determine % retained on the 0.425mm test sieve.

Contract Title :-	Client :-
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Signed :- MSond	Name :-	Page 2 of 3	UKAS TESTING 1367
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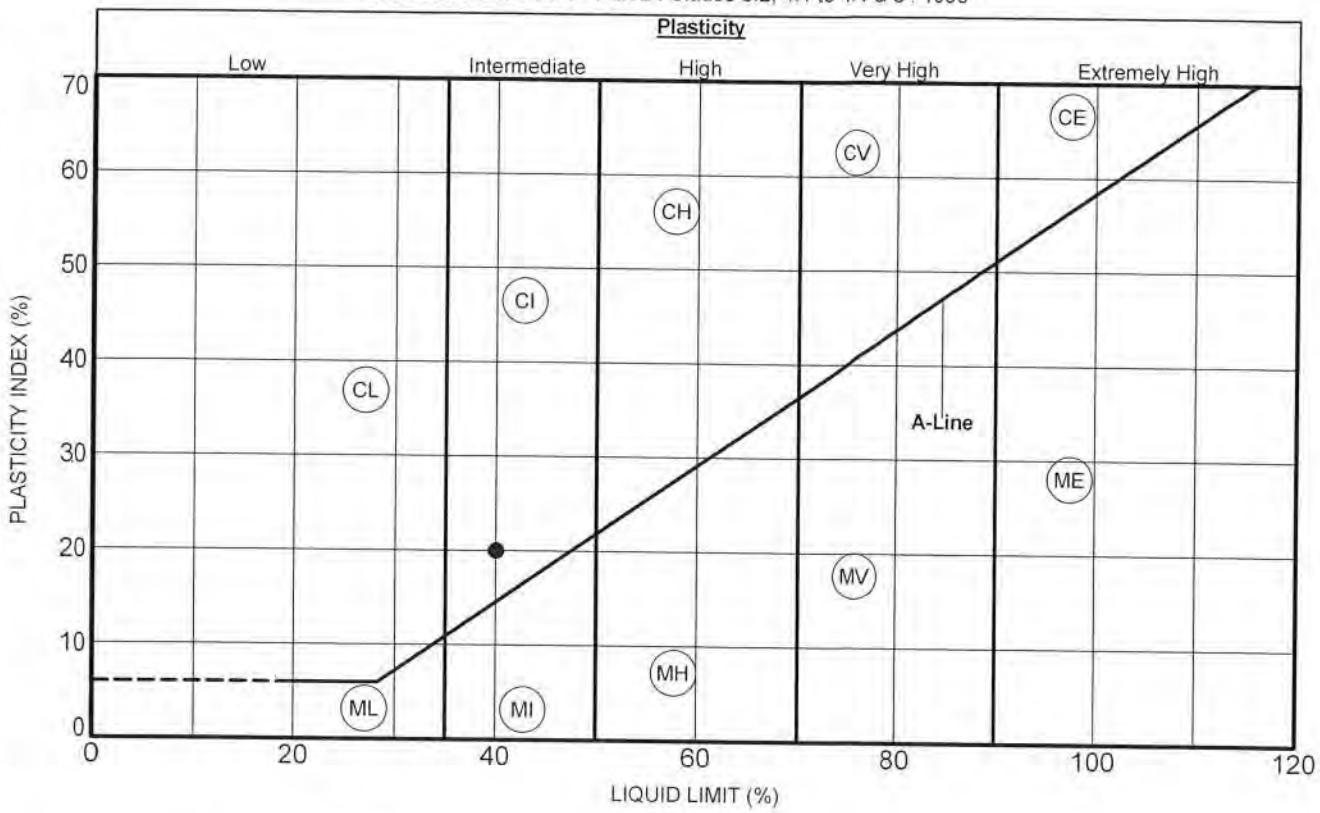
ATTERBERG LIMITS & NATURAL MOISTURE CONTENT

Test Method :- BS 1377 : Part 2 : Clause 3.2, 4.1 to 4.4 & 5 : 1990



Exploratory Hole No.	Depth (m)	Sample Type/Ref.	Specific Depth (m)	LL	PL	PI	I_L	Preparation Method	<0.425mm (%)	m/c (%)	Date Tested	
ATK_TP_012	2.90	J8	2.90	40	20	20	-0.03	Natural		19.5	03/08/2020	#

For description of sample please refer to the Laboratory Sample Description Sheet. # = Insufficient for 4 point PI
If sample is prepared in the natural state we are unable to determine % retained on the 0.425mm test sieve.

Contract Title :-	Client :-
Eston Road Intrusive Works	South Tees Development Corporation

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Determination of Particle Density

LABORATORY TESTING ENCLOSURE 3

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DETERMINATION OF PARTICLE DENSITY

BS1377 : Part 2 : Clause 8.2 : 1990

Exploratory Hole No.	Depth (m)	Sample Type & No.	Specific Depth (m)	Particle Density (Mg/m^3)	Date Tested
ATK_TP_001	1.40	B5	1.40	2.64	26/08/2020
ATK_TP_005	0.80	B2	0.80	2.32	26/08/2020
ATK_TP_007	3.50	B13	3.50	2.57	24/08/2020

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :- Eston Road Intrusive Works	Client :- South Tees Development Corporation

Signed :- MSone	Name :-		Page 1 of 1
Date of issue :- 05/11/2020	Certificate No :- PD/4287/1	AEG Contract No. :- 4287	UKAS TESTING 1367

Particle Size Distribution Sieving and Sedimentation

LABORATORY TESTING ENCLOSURE 4

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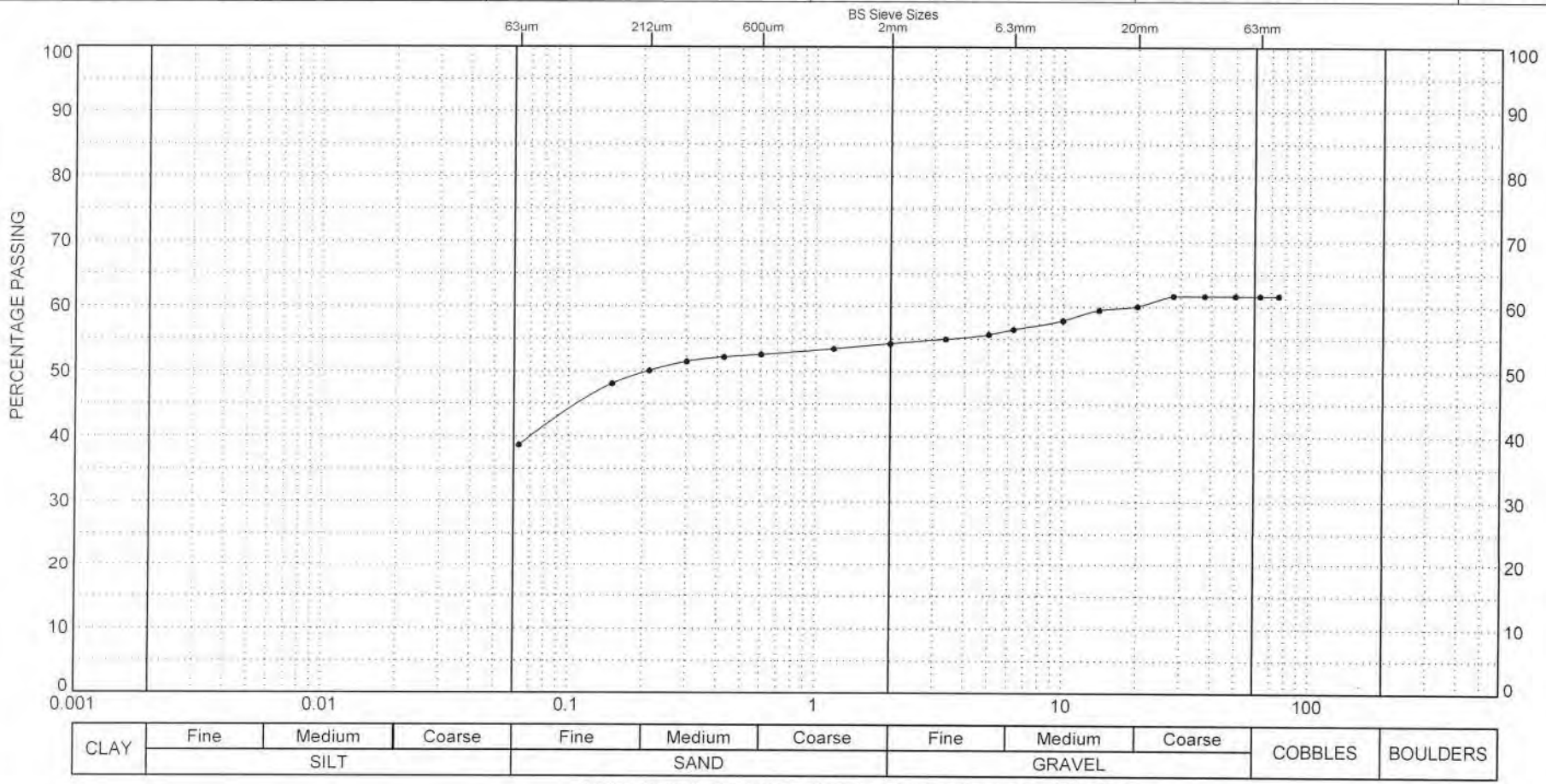
PARTICLE SIZE DISTRIBUTION

BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990
(Test deviated from standard due to insufficient sample mass)

Exploratory Hole No :- **ATK_TP_001**	Depth (m) :- **1.40**	Sample Type & No :- **B5**	Specific Depth (m) :- **1.40**	Date Tested :- **25/08/2020**



Sieve Size (mm)	Passing (%)
75	61.7
63	61.7
50	61.7
37.5	61.7
28	61.7
20	60.1
14	59.5
10	57.9
6.3	56.5
5	55.7
3.35	55.0
2	54.3
1.18	53.5
0.6	52.6
0.425	52.2
0.3	51.5
0.212	50.1
0.15	48.1
0.063	38.7

For description of sample please refer to the Laboratory Sample Description Sheet

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
05/11/2020	PSD/4287/ATK_TP_001/B5/1.40	MSerp	[illegible]	

Client :-	Contract Title :-	AEG Contract No :-
South Tees Development Corporation	Eston Road Intrusive Works	4287

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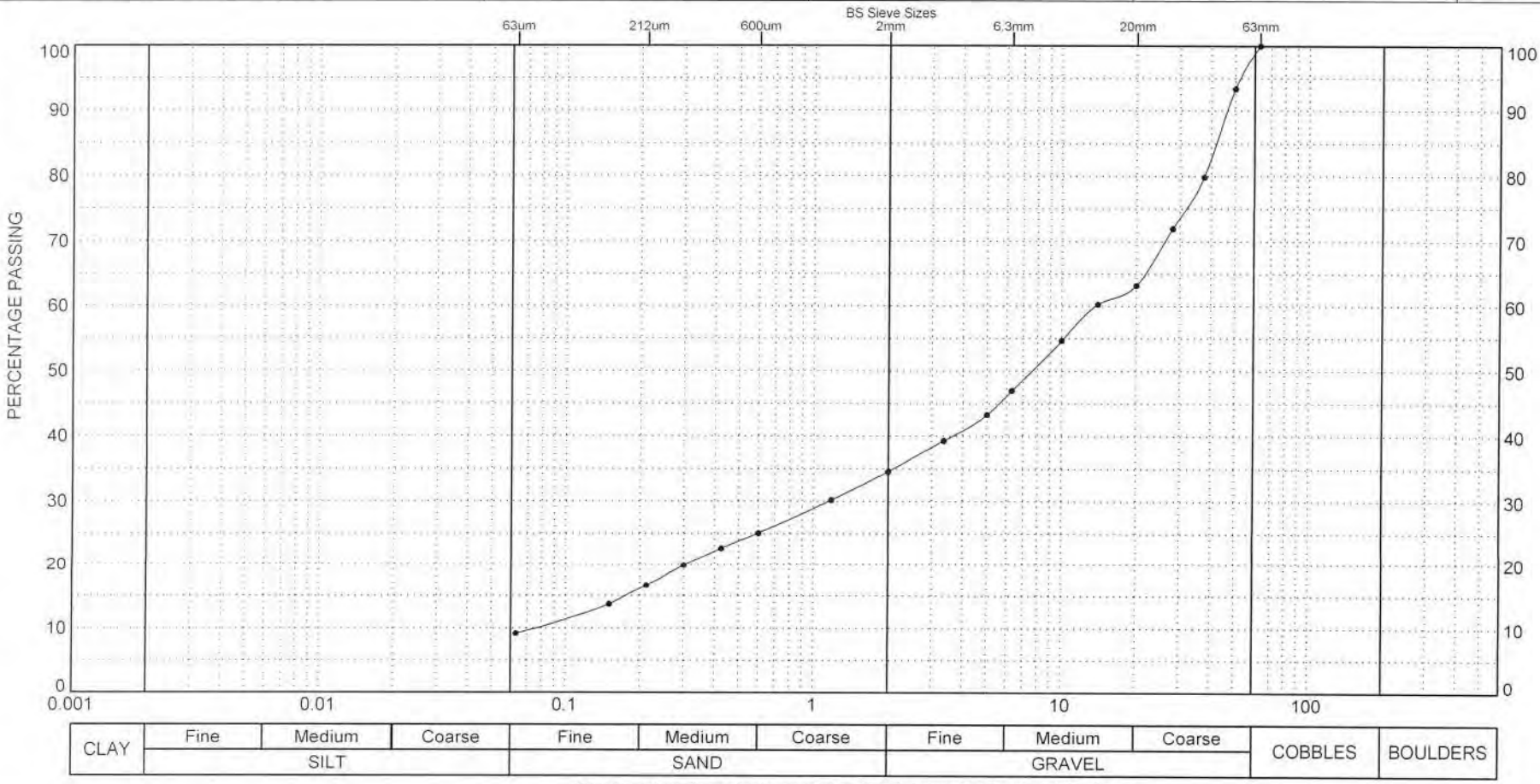
PARTICLE SIZE DISTRIBUTION

BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990
(Test deviated from standard due to insufficient sample mass)

Exploratory Hole No :- **ATK_TP_002**	Depth (m) :- **0.40**	Sample Type & No :- **B2**	Specific Depth (m) :- **0.40**	Date Tested :- **24/08/2020**



Sieve Size (mm)	Passing (%)
63	100.0
50	93.4
37.5	79.9
28	72.0
20	63.2
14	60.3
10	54.7
6.3	47.0
5	43.3
3.35	39.3
2	34.6
1.18	30.2
0.6	25.1
0.425	22.7
0.3	19.8
0.212	16.7
0.15	13.8
0.063	9.2

For description of sample please refer to the Laboratory Sample Description Sheet

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
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Client :-	Contract Title :-	AEG Contract No :-
South Tees Development Corporation	Eston Road Intrusive Works	4287

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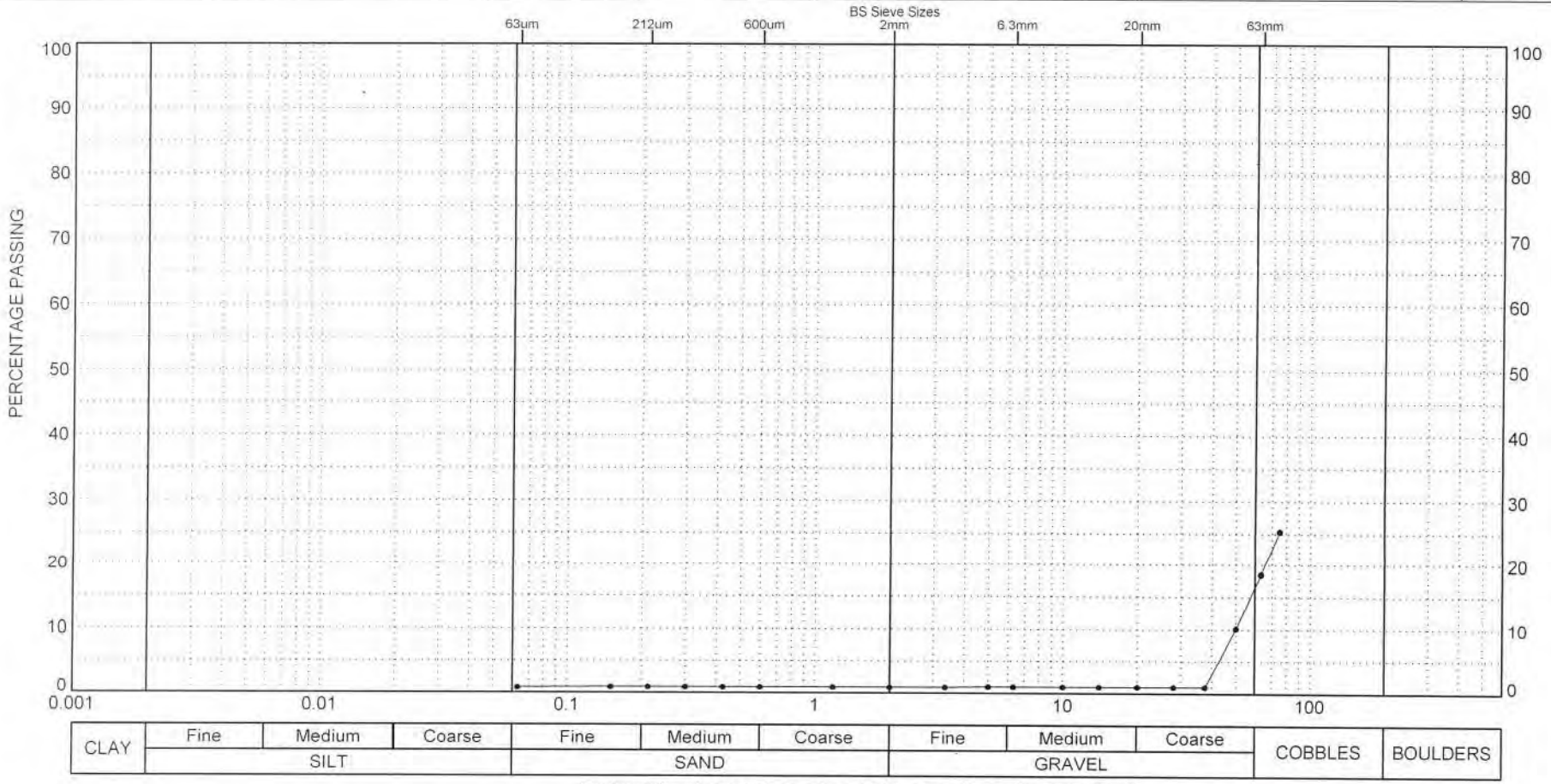
PARTICLE SIZE DISTRIBUTION

BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990
(Test deviated from standard due to insufficient sample mass)

Exploratory Hole No :- **ATK_TP_004**	Depth (m) :- **1.00**	Sample Type & No :- **B2**	Specific Depth (m) :- **1.00**	Date Tested :- **29/07/2020**



Sieve Size (mm)	Passing (%)
75	25.4
63	18.6
50	10.2
37.5	1.0
28	1.0
20	1.0
14	1.0
10	1.0
6.3	1.0
5	1.0
3.35	0.9
2	0.9
1.18	0.9
0.6	0.9
0.425	0.9
0.3	0.9
0.212	0.9
0.15	0.9
0.063	0.8

For description of sample please refer to the Laboratory Sample Description Sheet

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
05/11/2020	PSD/4287/ATK_TP_004/B2/1.00			

Client :-	Contract Title :-	AEG Contract No :-
South Tees Development Corporation	Eston Road Intrusive Works	4287

UKAS TESTING 1367

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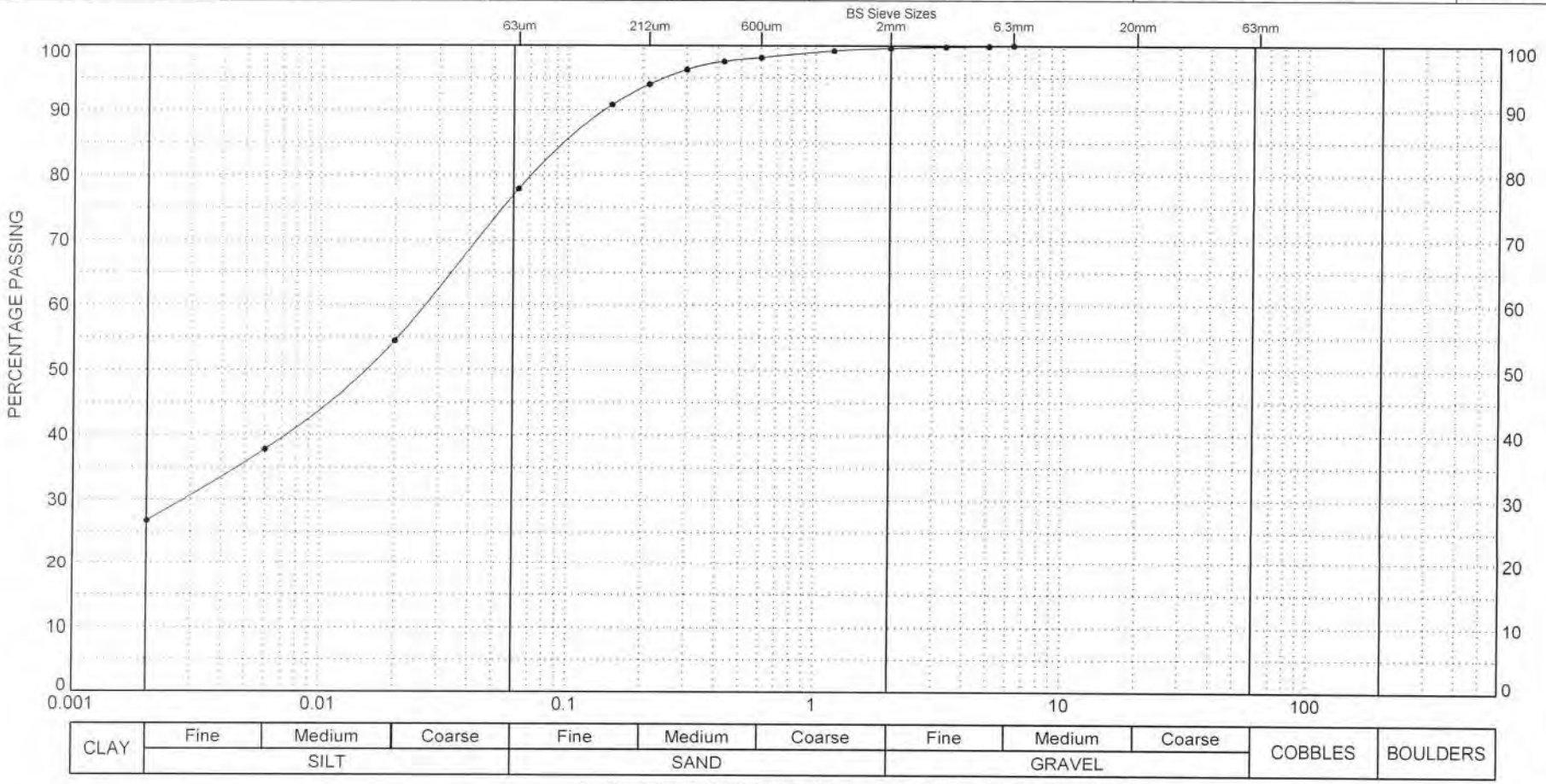
PARTICLE SIZE DISTRIBUTION

BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990

Exploratory Hole No :- **ATK_TP_004**	Depth (m) :- **2.10**	Sample Type & No :- **B5**	Specific Depth (m) :- **2.10**	Date Tested :- **29/07/2020**



Sieve Size (mm)	Passing (%)
6.3	100.0
5	99.9
3.35	99.8
2	99.6
1.18	99.2
0.6	98.1
0.425	97.5
0.3	96.3
0.212	94.0
0.15	90.9
0.063	77.9
0.02	54.5
0.006	37.8
0.002	26.8

For description of sample please refer to the Laboratory Sample Description Sheet

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
05/11/2020	PSD/4287/ATK_TP_004/B5/2.10	MSono		

Client :-	Contract Title :-	AEG Contract No :-
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