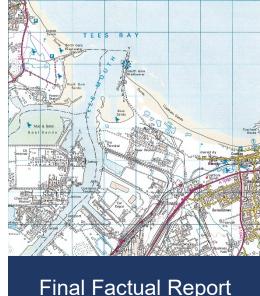
# PRELIMINARY ONSHORE GROUND INVESTIGATION FOR NET ZERO TEESSIDE (NZT) – SOUTH TEES DEVELOPMENT CORPORATION (STDC) 'MAIN SITE' AND ONSHORE CO2 EXPORT PIPELINE CORRIDOR



Final Factual Report (Rev.02)



Contract Number: 4339 Client: AECOM

Date: January 2022

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#### REPORT CONTROL SHEET

#### **Contract Details**

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## PRELIMINARY ONSHORE GROUND INVESTIGATION FOR NET ZERO TEESSIDE (NZT) – SOUTH TEES DEVELOPMENT CORPORATION (STDC) 'MAIN SITE' AND ONSHORE CO2 EXPORT PIPELINE CORRIDOR

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Specialist Chemical Testing (Tested Externally)	Appendix I
CPT Report (Lankelma)	Appendix II
High Pressure Dilatometer Testing (Cambridge In-Situ)	Appendix III

Abbreviation	Definition
SNC	Sonic Sampling
RC	Rotary Coring
RO	Rotary Openhole

**Text Abbreviations** 

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1. INTRODUCTION

It is proposed to construct a new Combined Cycle Gas Turbine (CCGT) gas-fired generating station along

with the required associated infrastructure on the site known as Teesside Works Redcar (or Teesworks). The

works were commissioned in order to identify the ground and groundwater conditions, presence/absence of

contamination and the presence/absence of UXO on site.

Allied Exploration & Geotechnics Limited (AEG) were contracted by AECOM 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:

• Eighteen sonic sample holes, fifteen of which were further advanced using rotary openhole/coring

methods.

Twelve machine excavated trial pits.

Eight hand excavated inspection pits.

Associated sampling.

In-situ standard penetration, photo-ionisation, litmus paper, variable head permeability, water quality

parameter, vibrating wire testing, hydraulic conductivity (slug method) and mini-diver testing.

• High Pressure Dilatometer Testing.

CPT testing.

Installation of gas/groundwater monitoring instrumentation.

During site works gas and groundwater monitoring (including LNAPL/DNAPL detection).

Post site works gas, volatile (using a PID detector) and groundwater monitoring with LNAPL/DNAPL

detection, including selected historical installations.

Site work was carried out between the 17th May and 13th July 2021 with subsequent post site work monitoring,

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.

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#### 2. THE SITE

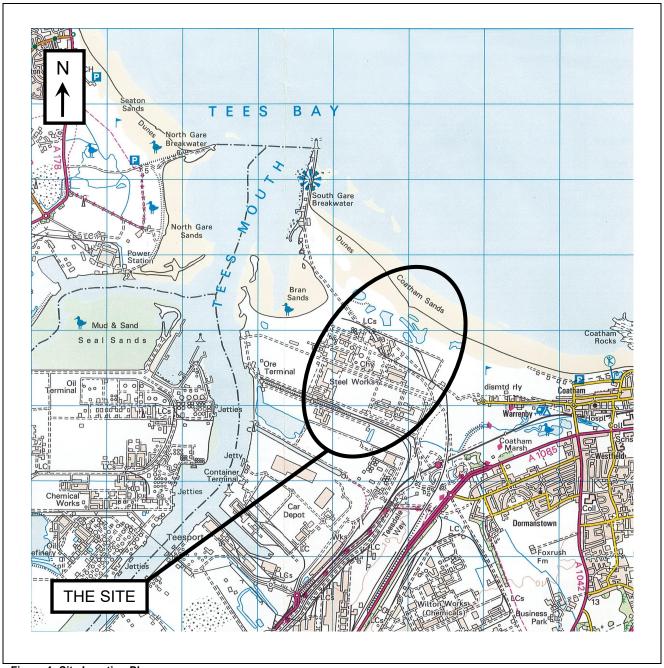


Figure 1: Site Location Plan

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#### 2.1 Location

The National Grid Reference of the approximate centre of the site is NZ 573 255. 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 in Redcar approximately 5km northwest of the town centre.

#### 2.2 Site Description and Topography

The site is located approximately 5km northwest of Redcar town centre in an area known as Teesside Works Redcar (or Teesworks). The site is relatively flat and comprises areas of reclaimed tidal marshes, sand dunes and land used for iron and steel production with extensive areas of historical slag deposits. The site is bound to the north by Coatham Sands and the Teesmouth and Cleveland Coast RMSAR, Site of Special Scientific Interest (SSSI) and to the south by a golf course and land associated with further historical industrial works,

#### 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 + A1:2020	Code of Practice for Ground Investigation (where not in contravention or superseded by Eurocode references)
BS EN ISO 14689-1:2018	Identification and Classification of Rock
BS EN ISO 14688-1:2018 & 14688-2:2018	Identification and Classification of Soil
BS 10175:2011+A2:2017	Investigation of Potentially Contaminated Sites
BS EN ISO 22476-3: 2005	Geotechnical investigation and testing - Field testing - Part 3 Standard Penetration Testing

Table 1: British Standard Reference Code Number

The depths of all sonic sample holes, trial pits and inspection pits, 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 Sonic Sample Hole, Trial Pit and Inspection Pit Records, Field Data Enclosures 2, 3 and 4 respectively. A key to all symbols and abbreviations used throughout the report is included in the Key Sheets.

In accordance with the Site Investigation Steering Group publication "Guidelines for the Safe Investigation by Drilling of Landfills and Contaminated Land" the site was classified YELLOW. Additional PPE was present on



site in the area surrounding MS\BH16 and MS\TP10 due to potential for the presence of asbestos, however

none was detected.

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 subjective. Refer to the Key Sheets for further information.

At the start of every day AECOM delivered a daily briefing to all site staff. Prior to commencing drilling each

day all work crews were required to complete a daily check list (via iAuditor) for their individual plant/drilling

rig/excavator.

3.2 **Environmental Considerations: Ecology Survey** 

Ecologists were present on site for the majority of the works. They provided Toolbox Talk's when necessary,

carried out fingertip searches in the area of the SSSI and also in certain areas of longer vegetation. They also

advised on access routes to avoid nesting birds and certain plant species. The ecologist noted that nesting

birds were present in the area of MS\BH01. This area was subsequently cordoned off and the borehole was

cancelled in accordance to the Client.

3.3 Health & Safety Considerations: Site of Special Scientific Interest (SSSI) Site

A number of positions were excavated at intertidal locations on the SSSI located to the northeast of the main

site, excavation of these positions had to coincide with a falling tide for safety reasons. A 21 Tonne tracked

excavator was present each day on the beach to act as a temporary recovery aid as a safety precaution in

case the CPT truck got into difficulty/broke down.

In order to gain access to the south side of the SSSI coordinated traffic management was installed along the

carriageway. A remote compound was set up at the Majuba Beach Car Park in Redcar for the intertidal CPT

work which was carried out on and close to the SSSI site.

The beach was cleared of all tools and excavation/testing apparatus at the end of every drilling shift so that

nothing was left on the beach overnight. This meant that the excavation/testing apparatus was moved

approximately 1km up and down the beach each day to all intertidal locations. Overnight security guards were

also present during the period of drilling on the SSSI area as a precaution.

3.4 **Health & Safety Considerations: UXO** 

Representatives from specialist subcontractor EOD Contracts Ltd. were present on site during the works to

undertake UXO On-site Support and down hole magnetometer tests. The tests were carried out from

'Main Site' And Onshore CO2 Export Pipeline Corridor | Contract Number: 4339

Status: Final

| Contract Title: Preliminary Onshore Ground Investigation For Net Zero Teesside (NZT) - South Tees Development Corporation (STDC)

approximately 1.00m into the natural strata (due to the interference from the ferrous nature of the Made Ground) at regular depths during the drilling of all sonic sample holes in accordance to the requirements of the Client. No UXO anomalies were detected. Previous desk studies of the area have indicated a high UXO risk.

#### 3.5 Health & Safety Considerations: Services

Wherever possible a GPR survey (PAS 128) was carried out by specialist subcontractor Discovery Surveys Ltd. at each location to produce a safe/cleared 10m by 10m grid to excavate/drill within It was not possible to clear a 10m by 10m grid around the position of MS\TP10.

A vacuum excavation truck from specialist subcontractor Pier, was initially employed to attempt to negate the use of hand digging for inspection pits, however due to the dense/unsuitable surface conditions this method was unsuitable and had to be abandoned.

Exploratory Hole Number	Date	Depth
MS\BH06	18/05/2021	0.18m BGL
MS\BH07	17/05/2021	0.43m BGL
MS\BH08	18/05/2021	0.30m BGL
MS\BH10	18/05/2021	0.24m BGL
MS\BH15	17/05/2021	0.02m BGL

**Table 2: Vacuum Excavation Details** 

All Permit-to-Work forms were completed and issued by AECOM using iAuditor. A permit was issued to and signed by all relevant AEG representatives for each exploratory hole. A service locating device (Cable Avoidance Tool (C.A.T.)) was used to scan a working area around the proposed exploratory hole location by a trained AEG representative. Attempts were made to excavate hand dug inspection pits to 1.20m BGL at each location, however due to difficult ground conditions it was not possible to excavate a pit to this depth on the main site. A number of inspection pits were however successfully excavated to 1.20m BGL for the CPT holes as these were located in areas of sand on the beach and within the SSSI.

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 3.

Exploratory Hole Number	Type of Service	Orientation & Depth (size where indicated)	Status (Damaged/Undamaged)	Additional Remarks
MS\TP06A	Metal Pipe	At 0.70m BGL	Undamaged	Possible solidified tar used to insulate pipe

Table 3: Services Encountered



#### 3.6 Exploratory Holes: Sonic Sampling Hole

Eighteen sonic sample holes were sunk using a Boart Longyear LS250 drilling rig, utilising cable percussive (shell and clay cutter) techniques, to depths of between 11.70m (MS\BH13) and 20.00m BGL (MS\BH15 & MS\BH17). Fifteen of these sonic sampling holes were further advanced using either a Boart Longyear DB520 or a Comacchio GEO 205 drilling rig, utilising rotary openhole/coring methods, to depths of between 20.20m (MS\BH13) and 38.60m (LF\BH01).

Rotary openhole drilling was performed using various diameter tri-cone rock bits in combination with water flush. Rotary coring employed a GeoBor 'S' wireline system (146mm OD) barrel in combination with a P.C.D. drill bit together with water flushing medium. This coring assembly was used to recover 102mm lined cylindrical specimens of soil/rock core. Within sonic sample holes MS\BH06, MS\BH07, MS\BH09 and MS\BH11 a number of High Pressure Dilatometer tests were undertaken (refer to Table 4 and Section 4.9 for further details). At these depths coring was changed to a T6-H barrel with a core diameter of 76mm. These sections of core were subsequently redrilled with GeoBor 'S' to widen the hole in order to advance.

For reference; sonic drilling was employed to drill through the Made Ground and underlying materials until the first cohesive layer was determined. Aquifer protection was installed, comprising a bentonite pellet seal, was then installed and the sonic casing remained in the ground. An AEG rotary drilling rig was then used to drill through the bentonite seal and subsequent strata until scheduled depth. On completion the AEG rotary casing was removed and the instrumentation was installed to the base depth of the sonic casing. Due to the density of the sand, the AEG rotary drilling rig was unable to remove the sonic casing so the sonic drilling rig was replaced over the hole and was used to remove the casing and complete the installations to ground level.

The Sonic Sample Hole Records are presented as Field Data Enclosure 2 and a summary of any relevant remarks are detailed in Table 4.

Exploratory Hole Number	Drilling Method	Completion Depth (m BGL)	Installation	Remarks	High Pressuremeter Dilatometer Depths
LF\BH01	SNC+RO+ RC	38.60	Yes – refer to Section 3.12	Advanced to required depth.	n/a
LF\BH02	SNC+RC	37.70	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH02	SNC+RO+ RC	29.00	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH03	SNC+RO+ RC	29.10	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH04	SNC+RC	30.00	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH05	SNC+RO+ RC	31.00	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH06	SNC+RO+ RC	37.10	Yes – refer to Section 3.12	Advanced to required depth.	25.75m and 27.80m
MS\BH07	SNC+RO+ RC	37.30	Yes – refer to Section 3.12	Advanced to required depth.	25.20m and 27.40m
MS\BH08	SNC+RC	29.90	Yes – refer to Section 3.12	Terminated due to sinking casing and jammed tools.	n/a



MS\BH09	SNC+RO+ RC	35.60	Yes – refer to Section 3.12	Advanced to required depth.	22.40m and 25.15m
MS\BH10	SNC+RO+ RC	34.70	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH11	SNC+RO+ RC	35.50	Yes – refer to Section 3.12	Advanced to required depth.	22.80m and 25.80m
MS\BH12	SNC+RC	35.70	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH13	SNC+RC	20.20	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH14	SNC+RC	22.20	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH15	SNC	20.00	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH16	SNC	19.20	Yes – refer to Section 3.12	Advanced to required depth.	n/a
MS\BH17	SNC	20.00	Yes – refer to Section 3.12	Advanced to required depth.	n/a
Any relevant pho	Any relevant photographs are presented after the applicable Sonic Sample Hole//Drillhole Record				

**Table 4: Borehole Summary** 

#### 3.7 Exploratory Holes: Mechanically Excavated Trial Pits

Twelve trial pits were mechanically excavated using a Komatsu 210 excavator to depths of between 0.60m (MS\TP10) and 4.50m BGL (LF\TP01, LF\TP02, LF\TP03, MS\TP01, MS\TP04 & MS\TP09). The trial pits were excavated in order to expose and identify known subsurface structures. The Trial Pit Records are presented as Field Data Enclosure 3 and a summary of any relevant remarks are detailed in Table 5.

Exploratory Hole Number	Excavation Method	Completion Depth (m BGL)	Remarks
LF\TP01	Machine Excavated	4.50	Advanced to required depth.
LF\TP02	Machine Excavated	4.50	Advanced to required depth.
LF\TP03	Machine Excavated	4.50	Advanced to required depth.
MS\TP01	Machine Excavated	4.50	Advanced to required depth.
MS\TP03	Machine Excavated	2.50	Terminated due to water ingress.
MS\TP04	Machine Excavated	4.50	Advanced to required depth.
MS\TP05	Machine Excavated	4.30	Advanced to required depth.
MS\TP06	Machine Excavated	3.20	Terminated due to underground structure and water ingress.
MS\TP06A	Machine Excavated	0.70	Terminated due to encountering pipe.
MS\TP07	Machine Excavated	4.00	Terminated - unable to progress.
MS\TP09	Machine Excavated	4.50	Advanced to required depth.
MS\TP10	Machine Excavated	0.60	Terminated due to concrete obstruction.
Any relevant photographs	are presented after the applic	able Trial Pit Record	

**Table 5: Trial Pit Summary** 

#### 3.8 Exploratory Holes: Hand Excavated Inspection Pits

Eight inspection pits were hand excavated to depths of between 0.20m (LF\CPT05) and 1.50m BGL (LF\CPT01A & LF\CPT03). These inspection pits were excavated in order to clear services and any obstructions prior to CPT testing. The Inspection Pit Records are presented as Field Data Enclosure 4 and a summary of any relevant remarks are detailed in Table 6.



Exploratory Hole Number	Excavation Method	Completion Depth (m BGL)	Remarks
LF\CPT01	Hand Excavated	1.20	Advanced to required depth.
LF\CPT01A	Hand Excavated	1.50	Advanced to required depth.
LF\CPT02	Hand Excavated	1.00	Terminated due to difficult digging.
LF\CPT02A	Hand Excavated	0.90	Terminated due to difficult digging.
LF\CPT03	Hand Excavated	1.50	Advanced to required depth.
LF\CPT04	Hand Excavated	0.70	Terminated due to instability caused by water ingress.
LF\CPT05	Hand Excavated	0.20	Terminated due to instability caused by water ingress.
LF\CPT06	Hand Excavated	0.30	Terminated due to instability caused by water ingress.
Any relevant photographs	are presented after the applic	able Inspection Pit Record	•

**Table 6: Inspection Pit Summary** 

#### 3.9 Exploratory Holes: Cone Penetrometer Testing

A total of eight electric piezocone penetrometer test drives were carried out by a specialist sub-contractor (Lankelma) to a maximum depth of 25.00m BGL (LF\CPT03) (Refer to Table 7 for details). CPT testing was carried out using a 18.5 tonne rubber tracked CPT unit with a 15 tonne capacity hydraulic ram set. The CPT tests were carried out through the previously excavated inspection pits refer to Section 3.8 for details.

The electric piezocone penetrometer test results are presented in Appendix II. The figures included as an appendix include depth related plots of cone resistance, friction ratio and pore water pressure, together with dissipation testing at specified points in the CPT holes.

CPT Test Number	Completion Depth (m BGL)	Remarks
LF\CPT01	7.96	Primary refusal factor: lateral support.
LF\CPT01A	8.04	Primary refusal factor: lateral support.
LF\CPT02	7.42	Primary refusal factor: lateral support.
LF\CPT02A	8.40	Primary refusal factor: lateral support.
LF\CPT03	25.00	Advanced to required depth.
LF\CPT04	24.02	Primary refusal factor: lateral support.
LF\CPT05	24.10	Primary refusal factor: lateral support.
LF\CPT06	22.04	Primary refusal factor: lateral support.

**Table 7: Cone Penetrometer Testing Summary** 

#### 3.10 Samples

Representative samples of soil, water and rock 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.

In addition soil samples were taken for VOC testing in accordance to BS10176:2020 as required by the Client. These samples were taken using a coring style sampler and extruded into a vial containing 10ml of a methanol preservative. A number of duplicate environmental samples were also retrieved from selected locations along with trip blanks and field blanks for QA/QC purposes.

#### 3.11 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. Furthermore, water was added during advancement of the sonic sample holes in order to facilitate drilling operations. As a consequence there is a possibility that this could have masked the discrete ingress of natural groundwater into the sonic sample holes, which subsequently may have been sealed as a result of progressing the casing.

Groundwater was encountered in a number 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 5: Groundwater Observations Made at the Time of Site Works. Standing water levels were recorded in all sonic sample holes and a number of trial pits at the beginning and/or end of each drilling shift. The water level is indicated on the applicable Sonic Sample Hole and Trial Pit Record as part of the boring progress information.

#### 3.12 Instrumentation & Monitoring

All eighteen sonic sample holes were installed with monitoring instrumentation in accordance with the requirements of the Client. Details of the installations are shown in Table 8 and on the relevant Sonic Sample Hole Records.

Exploratory Hole Number	Instrumentation	Installation Depth (m BGL)	Response Zone (m BGL)
LF\BH01	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	8.10 and 38.00	4.00-8.20 and 34.00-38.60
LF\BH02	4 No. vibrating wire piezometers	6.50, 17.00, 23.00 and 32.50	-
MS\BH02	4 No. vibrating wire piezometers	7.50, 13.50, 18.00 and 26.50	-
MS\BH03	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	2.70 and 28.50	1.10-2.80 and 24.50-29.10
MS\BH04	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	5.00 and 18.00	1.60-6.10 and 13.75-21.50
MS\BH05	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	12.50 and 29.90	5.00-13.50 and 21.50-31.00
MS\BH06	4 No. vibrating wire piezometers	4.50, 10.00, 19.20 and 30.00	-



MS\BH07	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	4.60 and 7.30	1.60-4.65 and 5.70-8.50
MS\BH08	2 No. 50mm diameter slotted standpipe with 10mm filter material	5.70 and 13.30	1.10-5.80and 11.20-13.40
MS\BH09	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	4.50 and 8.70	1.60-4.60 and 5.60-9.00
MS\BH10	4 No. vibrating wire piezometers	4.30, 8.00, 16.00 and 32.00	-
MS\BH11	2 No. 50mm diameter slotted standpipe with 10mm filter material	4.40 and 11.40	1.10-4.50 and 6.90-11.50
MS\BH12	1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted standpipe both with 10mm filter material	20.50 and 34.50	18.10-20.60 and 30.60-34.60
MS\BH13	2 No. 50mm diameter slotted standpipes both with 2-4mm filter material	9.50 and 20.00	5.70-10.30 and 15.80-20.20
MS\BH14	No. 50mm diameter slotted standpipe with 2-4mm filter material	8.00	4.50-8.50
MS\BH15	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	5.00 and 12.00	1.60-5.30 and 6.30-12.80
MS\BH16	4 No. vibrating wire piezometers	5.00, 8.00, 16.00 and 18.50	-
MS\BH17	2 No. 50mm diameter slotted standpipe with 2-4mm filter material	5.00 and 20.00	1.60-5.50 and 18.20-20.00

**Table 8: Instrumentation Summary** 

Instruments were monitored daily during site works for groundwater, using an interface meter to detect the presence of LNAPL/DNAPL, and weekly for gas. A record of these results are presented as Field Data Enclosure 6 (Groundwater Monitoring Results) and Field Data Enclosure 7 (Gas Monitoring Results).

The installations were all monitored along with a number of existing historical installations after the site works for gas, volatiles (using a MiniRAE 3000+ Photo-ionisation Detector) and groundwater (using an interface meter) on three occasions at monthly intervals in accordance with the Contract Specification. During the post site works monitoring groundwater samples were taken from all boreholes using low flow techniques. Water Quality Parameters were recorded for the purged water prior to sampling (see Section 4.6).

Well development was undertaken prior to the first groundwater sampling visit using bailers to remove a minimum of three well volumes. At the request of the consulting engineer the holes were developed again prior to the second groundwater sampling visit using an air uplift method. The water was removed from the borehole using a compressor and associated pipework, with all extracted water collected and stored in containers to be disposed of offsite.

A number of installations are scheduled to be installed with MiniDiver instruments to provide continuous water monitoring. Refer to Section 4.8 for details.

In addition, the Client requested that a condition survey was undertaken for a number of existing historical boreholes on site. The results of this survey is presented as Field Data Enclosure 8.

#### 3.13 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 on the relevant Sonic Sample Hole and Trial Pit Records.

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.

3.14 Surveying

The investigation positions were surveyed after completion of site works by specialist subcontractor Robson

Surveying. Surveying was undertaken from ground level, the top of the installation cover and from the top of

the installation pipe. The ground level details have been added to the logs with all three being presented on a

Summary Table within Field Data Enclosure 2. 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 Client was carried out in selected sonic sample holes and trial pits 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 with a number of the test results summarised at the

relevant depth on the Sonic Sample Hole and Trial Pit Records.

4.2 Standard Penetration Test Results

Standard Penetration Testing (SPT) was carried out in the sonic sample holes in accordance with techniques

outlined in BS EN ISO 22476-3: 2005 in order to determine the relative density and consistency of the strata

encountered. The 'N' value (number of blows per 300mm penetration) or the penetration per blow was

recorded for each test. Uncorrected 'N' values or penetration per blow data are provided on the applicable

Sonic Sample Hole Records. (Refer to page 6 of the key sheets for further details).

More detailed information concerning the standard penetration testing is given in *In-situ* Testing Enclosure 1

which includes the following;

Initial exploratory hole conditions prior to the test procedure.

Calibration and energy ratio (E<sub>m</sub>) information for the SPT hammer device used to carry out the test.

A breakdown of blows for each 75mm penetration interval.

Rod length (C<sub>R</sub>) and energy (C<sub>E</sub>) correction ratios.

Uncorrected 'N' value.

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- Corrected 'N60' value that applies the rod (CR) and energy (CE) corrections indicated.
- Pertinent remarks corresponding to the test procedure.

In addition to the above, a graph has been prepared for each exploratory hole which plots the uncorrected and corrected 'N' value results against depth. Calibration certificates for the SPT apparatus used during the testing procedure are also presented for reference within this *In-situ* Testing Enclosure.

#### 4.3 Photo Ionisation Detector (PID)

Photo-ionisation detector (PID) screening for semi-volatile and volatile organic compounds was conducted on selected environmental samples taken during the investigation and at selected depths during drilling using a MultiRAE Lite. PID screening is also scheduled to be undertaken from gas taps on selected monitoring instruments in conjunction with the post site work gas and groundwater monitoring visits using a MiniRAE 3000+. The results for the sample based PID tests are recorded in tabular format as *In-situ* Testing Enclosure 2 and, where applicable, on the Exploratory Hole Records. Installation based PID monitoring is presented in Field Data Enclosure 7.

#### 4.4 Litmus Paper Testing

All environmental samples taken with in the made ground were tested to determine the approximate pH on site using litmus paper. These test results are presented as *In-situ* Testing Enclosure 3.

#### 4.5 Variable Head Permeability Testing

Six variable head (rising and/or falling) permeability tests were carried out in selected standpipe installations in accordance with the requirements of the Consulting Engineer utilising the methods described in BS5930: Section 4:1999. The data is presented in *In-Situ* Testing Enclosure 4.

#### 4.6 In-situ Water Quality Parameter Testing

Groundwater sampling is scheduled to undertaken from all installations during post site works monitoring in accordance with techniques outlined in the relevant British Standard and/or AEG Quality Procedure. Water Quality Parameters were recorded for the purged water prior to sampling. The parameters tested were pH, temperature, electrical conductivity, redox potential, turbidity and dissolved oxygen. The results will be presented in tabular format as *In-situ* Testing Enclosure 5 once available.

#### 4.7 Vibrating Wire Piezometer Test Results

Vibrating wire piezometer instruments were installed into selected installations and set to record the changes over the monitoring period. The data and calibration sheets are presented as *In-situ* Testing Enclosure 6.

#### 4.8 Mini-Diver Test Results

Mini-Diver instruments were installed into seven selected installations and set to record the changes in water pressure over the monitoring period. The mini diver data is presented as *In-situ* Testing Enclosure 7.



#### 4.9 High Pressure Dilatometer Test Results

High Pressure Dilatometer testing was undertaken within four sonic sample holes during site works by specialist subcontractor Cambridge *In-situ* Limited. The results are presented as Appendix III.

#### 4.10 Hydraulic Conductivity: Slug Tests

Hydraulic conductivity testing was carried out in a number of selected monitoring standpipes using the Displacement (Slug) Test Method. A MiniDiver was installed in the standpipes prior to inserting the slug in order to continuously log the groundwater level during the test. A mechanical slug was then used to perform variable head (rising and falling) permeability tests within the instrumentation. The Hydraulic Conductivity (Slug Tests) results are presented in graphical format showing the rising and falling conditions as Monitoring Enclosure 8.

#### 5. LABORATORY TESTING

#### 5.1 General

Laboratory testing as scheduled by the Client was carried out on selected samples in accordance with techniques outlined in BS 1377:1990 and BS EN 17892 as appropriate, 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 9.

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 Chloride, Organic, Loss on Ignition, Total Sulphur, Sulphate and pH (Tested externally)	See External Laboratory Certificates
Determination of California Bearing Ratio	BS 1377 Part 4 1990
Determination of One Dimensional Consolidation Properties	BS 1377 Part 5 1990
Shear Strength by Direct Shear	BS 1377 Part 7 1990
Undrained Shear Strength in Triaxial Cell without Pore Water Pressure Measurement	BS 1377 Part 7 1990
Consolidated Undrained Shear Strength in Triaxial Cell with Measurement of Pore Pressure	BS 1377 Part 8 1990
Water Content on Rock	ISRM 1981



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Determination of Point Load Index	ISRM 1985
Determination of Unconfined Compressive Strength (Tested externally)	ISRM 1985
Slag Analysis (Tested Externally)	-

Table 9: Geotechnical Testing

#### 5.3 Specialist Chemical Testing

Selected samples have been submitted for chemical analysis as specified by the Client, conducted under subcontract arrangements with Derwentside Environmental Testing Services (DETS) and Element. 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 Client. Any identified asbestos is presented in Appendix I.



**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.





#### 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  $\Psi$  denotes a water strike and is suffixed with a

number, which indicates the strike order. The corresponding unfilled symbol  $\frac{1}{2}$  is the depth the strike rose to.

Groundwater seepage within an exploratory hole is denoted by the symbol.

Strata Columns

Seepage

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 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 the current BS 5930 with the following implementation:

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

Supplementary laboratory or in-situ assessed measurements of undrained strength are provided where applicable information is available in parenthesis in accordance with BS 5930 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, 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

Cobble and boulder content is expressed in accordance with the terms provided in BS5930 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
	<5	Low boulder content
Boulders	5 to 20	Medium boulder content
	>20	High boulder content
	<10	Low cobble content
Cobbles	10 to 20	Medium cobble content
	>20	High cobble content

**KEY SHEETS TABLE 2** 

A Rock Strength based on assessed field or measured unconfined compressive strength follows the classification scheme given in BS5930 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	Can be peeled by a pocket knife with difficulty. Shallow indentations made		
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	(5-25)	by firm blow with the point of geological hammer.		
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 4.2.7, Table 2		SO 14689-1:2003 4.2.7, Table 5 perseded Version)			

#### **KEY SHEETS TABLE 3**

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). 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	Class Classifier Typical characteristics									
Α	Unweathered	Original strength, colour, fracture spacing								
В	Partially weathered	Slightly reduced strength, slightly closer fracture spacing, weathering penetrating in from fractures, brown oxidation								
С	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





#### 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 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 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.

Main Engineering description of each individual soil or rock type follows recommendations outlined in BS5930.

#### 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.

#### Standard Penetration Test

Depth The depth commenced.

Type Type of standard penetration test (SPT).

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.





#### **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<sub>(ss)</sub> Sample has been subsampled.

 $\mathsf{ES}_{(U)}$  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.

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.

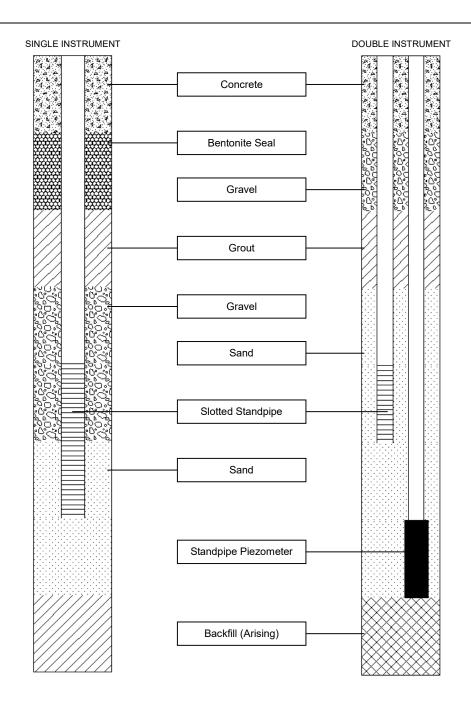
NR No recovery from the core run. These zones are based on the interpretation of the logging engineer and are

therefore potentially subjective.





Symbols and Abbreviations: Explanation of Instrumentation Legends Used





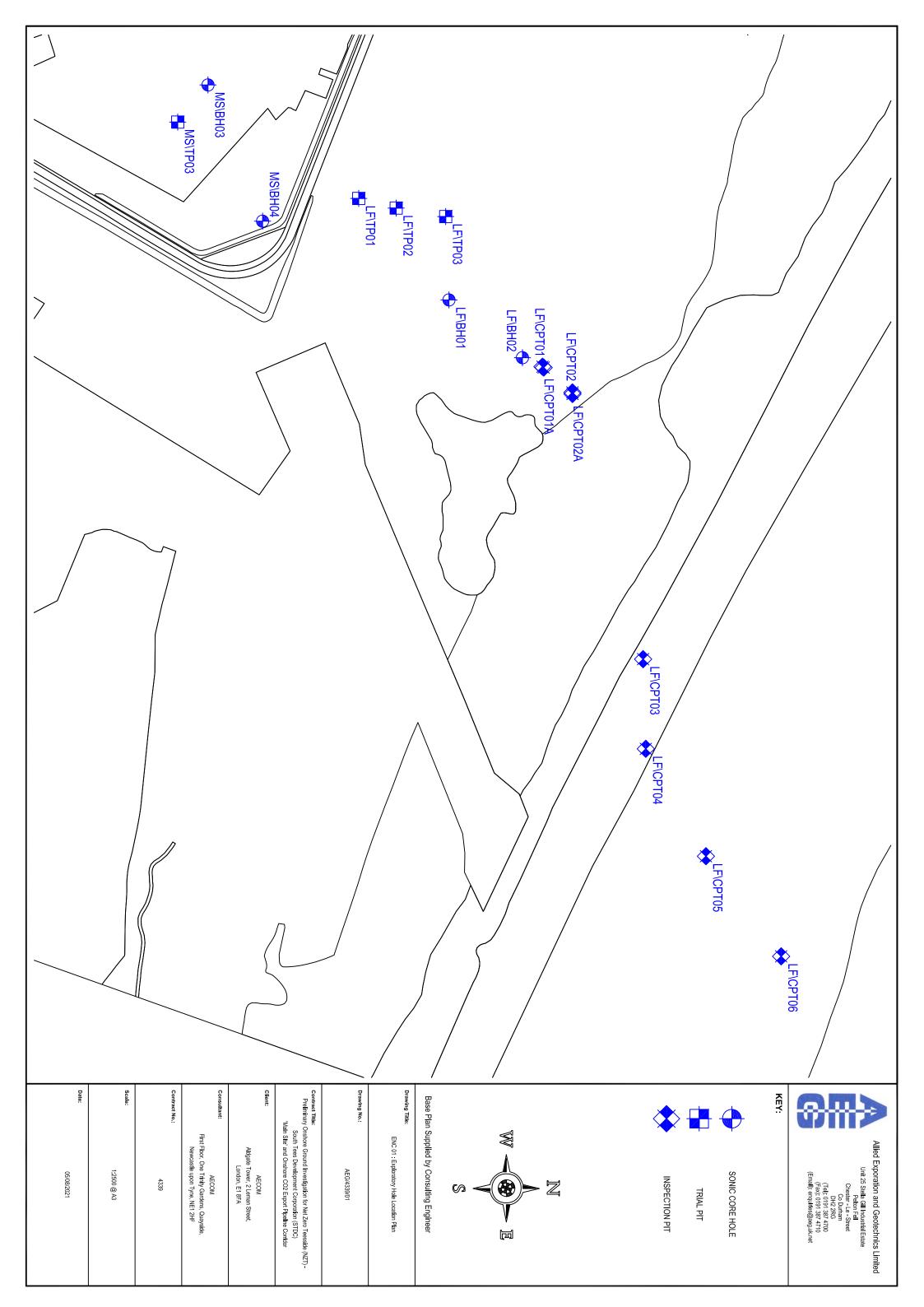


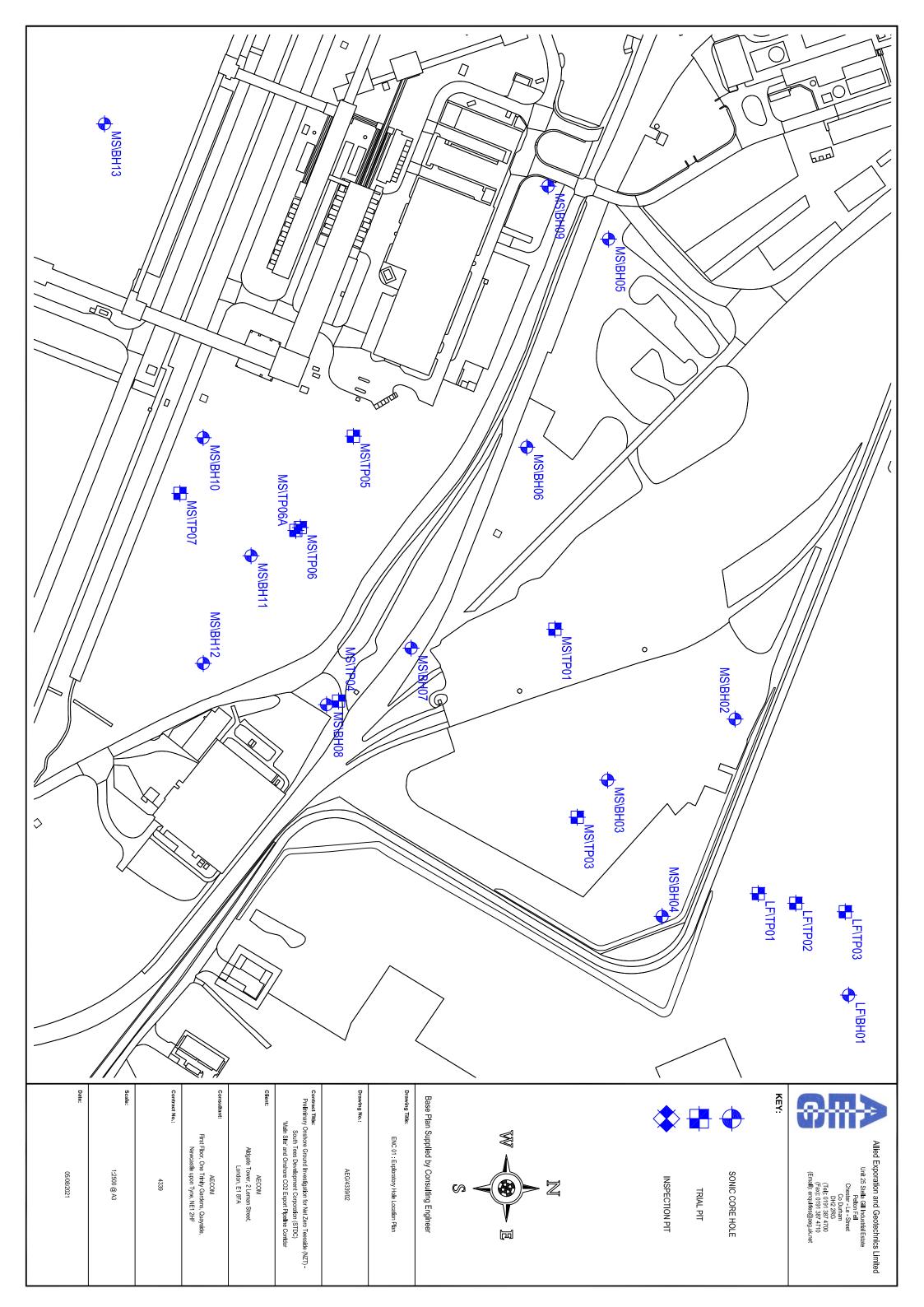
Symbols and Abbreviations: Explanation of Legends Used

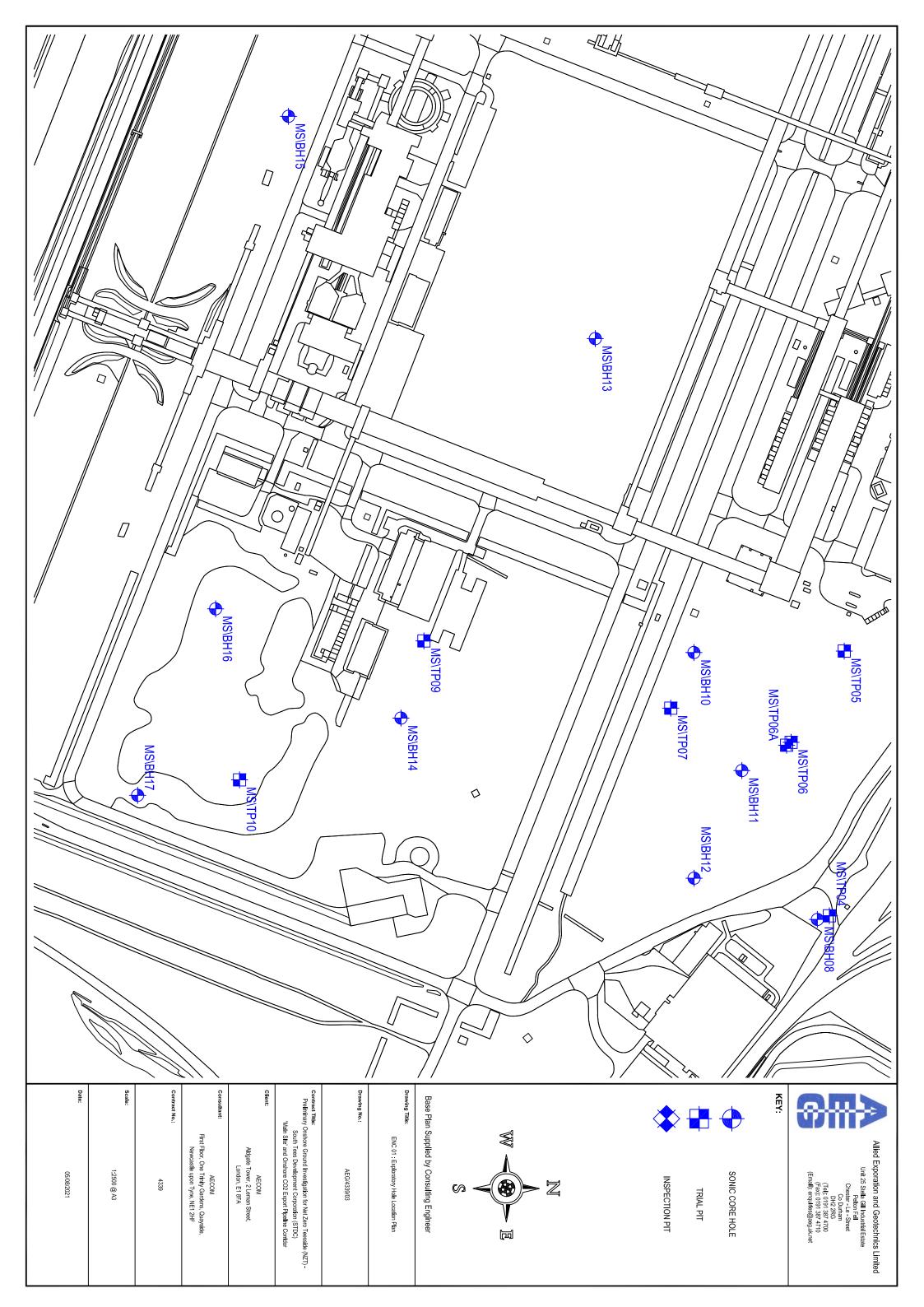
		Rocks										
Soi	ls											
			Sedimentary		norphic	Igneous						
	Made Ground		Chalk		Coarse Grained	+ + + + + + + + + + + + + + + + + + + +	Coarse Grained					
	Cobbles and Boulders		Limestone		Medium Grained	+++++ +++++ +++++ +++++ +++++	Medium Grained					
	Gravel		Conglomerate		Fine Grained		Fine Grained					
	Sand		Breccia									
* * * * * * * * * * * * * * * * * * *	Silt		Sandstone									
	Clay	X X X X X X X X X X X X X X X X X X X	Siltstone									
7 77 77 77 77 77 77 77 77 77 77 77 77 7	Peat		Mudstone									
\$\frac{\pi_0}{\pi_0} \frac{\pi_0}{\pi_0} \frac	Topsoil		Shale									
Note: Composite signified by combin			Coal									
X X X X X X X X X X X X X X X X X X X	Silty Sand		Pyroclastic (Volcanic Ash)									
			Gypsum									

**Exploratory Hole Location Plan** 









**Sonic Sample Hole Records** 



#### **Sonic Sample Hole Summary Table**

Exploratory Hole Number	Completion Depth (m BGL)	Eastings	Northings	Level (Ground Level)	Level (Top of Shallow Pipe)	Level (Top of Deep Pipe)	Level (Top of Cover)
LF\BH01	38.60	457474.053	525776.345	7.277	7.177	7.177	7.277
LF\BH02	37.70	457520.508	525835.382	6.326	-	-	6.326
MS\BH02	29.00	457252.259	525685.159	4.818	-	-	5.288
MS\BH03	29.10	457301.314	525582.699	4.672	4.837	4.819	5.049
MS\BH04	30.00	457410.778	525626.536	5.006	5.177	5.171	5.293
MS\BH05	31.00	456866.530	525583.502	7.484	7.598	7.563	7.802
MS\BH06	37.10	457033.748	525517.758	7.976	-	-	8.195
MS\BH07	37.30	457195.207	525424.790	7.330	7.505	7.381	7.610
MS\BH08	29.90	457240.665	525356.883	8.745	8.975	8.975	9.081
MS\BH09	35.60	456823.949	525534.870	7.466	7.286	7.276	7.466
MS\BH10	34.70	457026.135	525257.651	7.502	-	-	7.722
MS\BH11	35.50	457121.000	525296.160	7.255	7.435	7.436	7.600
MS\BH12	35.70	457207.512	525257.781	7.147	7.280	7.340	7.605
MS\BH13	20.20	456773.892	525178.376	5.714	5.845	5.939	6.021
MS\BH14	22.20	457078.825	525022.226	7.191	7.400	-	7.545
MS\BH15	20.00	456595.238	524931.815	7.247	7.470	7.470	7.595
MS\BH16	19.20	456991.050	524873.262	7.904	-	-	8.384
MS\BH17	20.00	457140.890	524810.592	9.247	9.426	9.428	9.568

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#### **SONIC SAMPLE HOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory	Hole No.			
Client: AECOM		u-west of Redcar, North ` E:457474.053 N:525776	LF\BH	101	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	SEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 1 of	3

SAMP	LES & TI	ESTS					STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description			
0.30 0.30-1.20 0.30-1.20 0.30 0.50 0.50 1.00	ES1 <sub>(SL1)</sub> SL1 <sub>(SS)</sub> B8 <sub>(SL1)</sub> PID ES2 <sub>(SL1)</sub> PID	<0.1ppm <0.1ppm		6.08		- - - - - - - - - - - - - - - - - - -	MADE GROUND (Grey clayey/silty sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes occasionally orange stained slag. Cobbles are angular to subangular include grey slag. Slag is vesicular (100%)).	7 4 4 6 A A A A A A A A A A A A A A A A A		
1.00 1.00 1.20-2.70 1.20-2.10 1.20 1.50 1.50 2.00 2.00 2.10-2.70 2.50	ES3 <sub>(SL1)</sub> J7 <sub>(SL1)</sub> PID SL2 <sub>(SS)</sub> B10 <sub>(SL2)</sub> S J9 <sub>(SL2)</sub> PID ES4 <sub>(SL2)</sub> PID B12 <sub>(SL2)</sub>	0.1ppm N20 <0.1ppm <0.1ppm				- - - - - - - - - - - -	MADE GROUND (Grey slightly clayey/silty sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes occasionally orange stained slag. Slag is vesicular (100%)). (Engineer notes saturated from drilling operations). at c.1.20m BGL medium dense.	0 0 8888888888888888888888888888888888		
2.50 2.50 2.70-4.20 2.70 3.00	J11 <sub>(SL2)</sub> PID SL3 <sub>(SS)</sub> S PID	<0.1ppm 50/70mm <0.1ppm		4.58		2.70 - (0.70)	MADE GROUND (Very dense grey dark grey slightly sandy gravel. Sand is fine to coarse subangular to angular and includes slag. Gravel is fine to coarse subangular to subrounded and includes occasionally orange stained slag. Slag is vesicular			
3.40 3.40-3.65 3.50 3.65-4.70	J13 <sub>(SL3)</sub> B14 <sub>(SL3)</sub> PID B16 <sub>(SL3)</sub>	<0.1ppm		3.88		3.40	(25-50%)).  MADE GROUND (Grey brown gravelly sand with occasional fragments of white bivalve shell. Sand is coarse. Gravel is fine to coarse subangular to subrounded and includes grey dark grey slag. Slag is vesicular (25-50%)).			
4.00 4.00 4.00 4.20-5.70 4.20 4.50	ES6 <sub>(SL3)</sub> J15 <sub>(SL3)</sub> PID SL4 <sub>(SS)</sub> S J17 <sub>(SL4)</sub>	<0.1ppm N31				- - - - - -	Dense yellow brown SAND with occasional fragments of bivalve shell. Sand is coarse. (Tidal Flat Deposits).  from c.4.70m BGL with frequent fragments of bivalve shell	000		
5.00	PID	<0.1ppm				- - - - (3.55)	J			
5.70-7.20 5.70-6.45 5.70 6.00 6.00	SL5 <sub>(SS)</sub> B18 <sub>(SL5)</sub> S J19 <sub>(SL5)</sub> PID	50/180mm <0.1ppm				- - - - - - -	at c.6.00m BGL very dense.			
6.45-7.20 6.50	B21 <sub>(SL5)</sub> J20 <sub>(SL5)</sub>					- - - - -				
7.00 7.00 7.20-8.70 7.20-7.95 7.20 7.50	J22 <sub>(SL5)</sub> PID SL6 <sub>(SS)</sub> B23 <sub>(SL6)</sub> S J24 <sub>(SL6)</sub>	<0.1ppm 3/325mm		80.0		7.20	Very loose yellow brown SAND with occasional fragments of bivalve shell. Sand is coarse. (Tidal Flat Deposits).			

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Borin	g Progres	s and Wat	er Observ	ations	L	iner Sample	e Informatio	n	General		
Date	Depth	Casing	Casing Dia (mm)	Wate Standi	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
22/06/2021	0.00	0.00	178		0.30 - 1.20	178	100	Yes	(1) Description derived from drillers daily report.		
					1.20 - 2.70	178	100	Yes	(2) Inspection pit dug prior to drilling.		
					2.70 - 4.20	178	100	Yes	(3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 5.10-8.10m (diver		
					4.20 - 5.70	178	100	Yes	installed to 8.00m BGL) and 35.00-38.00m BGL.		
					5.70 - 7.20	178	100	Yes	(4) UXO carried out as per the Client instructions.		
					7.20 - 8.70	178	100	Yes	(5) Aquifer protection installed between 16.75-15.60r BGL prior to commencing rotary drilling.		

Checked by: Logged by: R. Clarke For explanation of symbols and abbreviations see Key Sheets Contract No. All dimensions in metres 4339 Scale 1:50.00

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yourself:457474.053 N:525776.3	LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 2 of 3

SAMPLES & TESTS					STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill			
7.95-8.70 8.00 8.00	B25 <sub>(SL6)</sub> J26 <sub>(SL6)</sub> PID	<0.1ppm				(2.10)	Very loose yellow brown SAND with occasional fragments of bivalve shell. Sand is coarse. (Tidal Flat Deposits). (continued)				
8.50	J27 <sub>(SL6)</sub>					[					
8.70-10.20 8.70-9.30	SL7 <sub>(SS)</sub> B28 <sub>(SL7)</sub> S					- -	at c.8.70m BGL slightly silty.				
8.70 9.00	J29 <sub>(SL7)</sub> PID	N6		-2.02		·_ · 9.30	at c.9.00m BGL loose.				
9.00 9.50-10.20	B30 <sub>(SL7)</sub>	<0.1ppm		2.02	0	-	Yellow brown occasionally multicolored slightly gravelly SAND with frequent fragments of shell and bivalve shell. Sand is fine to				
9.50	J31 <sub>(SL7)</sub>					.[(0.90)  	coarse and includes shell. Gravel is fine to coarse angular to rounded and includes mudstone and sandstone. (Tidal Flat Deposits).				
10.00 10.00	J32 <sub>(SL7)</sub> PID	<0.1ppm		-2.92	×0	10.20	Medium dense yellow brown slightly silty slightly gravelly SAND				
10.20-11.70 10.20-11.70 10.20 10.50	SL8 <sub>(SS)</sub> B33 <sub>(SL8)</sub> S J34 <sub>(SL8)</sub>	N14			· · · · × · · · · · · · · · · · · · · ·	 - 	with frequent fragments of bivalve shell. Sand is coarse and includes shell. Gravel is fine to coarse subrounded to rounded and includes sandstone and mudstone.				
11.00 11.00	J35 <sub>(SL8)</sub> PID	<0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - -	(Tidal Flat Deposits). at c.10.80m BGL 1 No. cobble of grey fossiliferous limestone (90mm). Fossils are white subangular circular (approximately				
						- - -	10mm diameter).				
11.70-13.20 11.70-12.45 11.70	SL9 <sub>(SS)</sub> B36 <sub>(SL9)</sub> S	N3			× · · · · · · · · · · · · · · · · · · ·	: - -	at c.11.70m BGL very loose.				
12.00 12.00	J37 <sub>(SL9)</sub> PID	<0.1ppm				.[ 					
12.45-13.20 12.50	B38 <sub>(SL9)</sub> J39 <sub>(SL9)</sub>				× · · · · · · · · · · · · · · · · · · ·	- - - -					
13.00	.140, 0, 0				×0	  					
13.00 13.20-14.70	J40 <sub>(SL9)</sub> PID SL10 <sub>(SS)</sub>	<0.1ppm				(5.90)					
13.20-13.95 13.20 13.50	B41 <sub>(SL10)</sub> S J42 <sub>(SL10)</sub>	N24			×	. <del>.</del> - - -					
13.95-14.70 14.00 14.00	B43 <sub>(SL10)</sub> J44 <sub>(SL10)</sub> PID	<0.1ppm			xo	- - - - -					
14.50	J45 <sub>(SL10)</sub>				×	<u>-</u>					
14.70-16.20 14.70-15.45 14.70	SL11 <sub>(SS)</sub> B46 <sub>(SL11)</sub> S	N17			.xo	 - - 					
15.00 15.00	J47 <sub>(SL11)</sub> PID	<0.1ppm			×						
15.45-16.20 15.50	B48 <sub>(SL11)</sub> J49 <sub>(SL11)</sub>				×	- - - - -					

Boring Progress and Water Observations					Liner Sample Information				General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
22/06/2021 23/06/2021	8.70 8.70	8.70 8.70	178 178	6.30	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 5.10-8.10m (diver installed to 8.00m BGL.) and 35.00-38.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.75-15.60m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: R. Clarke Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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Œ				S	ONIC	SAN	IPLE HO	LE REC	ORD		FINAL		
Project:			Prelimina	ry Ons	hore G	round Inv	vestigation fo	or NZT			Exploratory Hole No.		
Client:		AEC	ОМ			Lo	ocation: North-w	tion: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345					
Method (Equip Sonic/R	pment): otary Corir	ng (Boart L	ongyear L	.S250/	Comac	chio GE	G	round Level (m		Start Date: 22/06/2021	Sheet: 3 of 3	<b>.</b>	
SAM	IPLES & T	ESTS					<u> </u>	STR	ATA			ant/	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness	s)		Descri	iption		Instrument/ Backfill	
16.00 16.00	J50 <sub>(SL11)</sub> PID	<0.1ppm		-8.82 -8.92	<u>xo</u>	16.1 16.2	⊕ (1) CLAY.			continued by r			
	g Progress				tor		Liner Sampl				General Remarks		
Date 23/06/2021	Depth 16.20	Casing 16.20	Casing Dia (mm)	Wat Stand	ding	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	(2) Inspection pit (3) Double instal standpipes instal installed to 8.00r (4) UXO carried (5) Aquifer protein	Remarks  erived from drillers daily re dug prior to drilling. lation: 2 No. 50mm diamete led between 5.10-8.10m (n BGL) and 35.00-38.00m out as per the Client instruction installed between 16. imencing rotary drilling.	er slotted liver BGL. ctions.	

For explanation of symbols and abbreviations see Key Sheets

Checked by:

Contract No. 4339

Logged by: R. Clarke

All dimensions in metres Scale 1:50.00

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RC

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### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explor	atory Hole No.
Client:	ССОМ		-west of Redcar, North Yor -:457474.053 N:525776.34		L	F\BH01
Method (Equipment): Sonic/Rotary Coring (Boar	t Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet:	1 of 18

Depth   TCR   SCR   SC	RUN DETAILS		STRATA			
16.75 68 SOIL						
16.75 68 SOIL	(Core Ø) RQD LT A	Level Legend Depth (Thickness			Instrument/ Backfill	
16.75  17.60  17		-8.92 16.20	<u> </u>	(1) CLAY.	<b>****</b>	
17.60  93  Soft to firm thinly laminated dark brown sandy slightly gravelly sitly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone, limestone and coal. (Tidal Flat/Glacial Deposits).  17.50m US4  17.50m	16.75					
17.50m U54  17.50m U54  17.60m medium strength. Clay is of high plasticity.  17.50m U54  17.50m u54  17.60m medium strength. Clay is of high plasticity.  17.50m u54  17.60m u		Xo   X   X   X   X   X   X   X   X   X	75m J51 75m B52	brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone, limestone and coal.		
Stiff dark red brown slightly sandy slightly grayelly CLAY. Sand is fine to	93	X	50m U54	17.60m medium strength. Clay is of high plasticity.		
19.20m B56  coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone, coal and limestone. (Glacial Till).	100	X	20m B56	coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone, coal and limestone.		

Drilling Progress and Water Observations					ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
24/06/2021	16.20	16.20	4.06	19.10	S	N33	16.75 - 17.60 17.60 - 19.10 19.10 - 20.60	Water Water Water	100 100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install (diver installed to 8.00m BGL.	No. 50mm diameter led between 5.10-8.10m BGL) and 35.00-38.00m er the Client instructions. stalled between	
	nensions i Scale 1:25						mbols and Checked by: Logged by: ey Sheets K.W. R. Clarke		Contract No. 4339			

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## **DRILLHOLE RECORD**

Status:- FINAL

Project: Prelimi	Exploratory Hole No.					
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345					
Method (Equipment): Sonic/Rotary Coring (Boart Longyea	r LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 2 of 18		

RUN	I DETA	AILS					STRATA	<u> </u>	
Depth	TCR	ture	Te.	Reduced		Depth	Des	scription	Instrument/ Backfill
(Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
20.60	100					-	20.60m B60 20.70m U59	Stiff dark red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone, coal and limestone.  (Glacial Till). (continued)  20.75m very high strength. Clay is of intermediate plasticity.	
(102mm)						- - - - - - - - (5.40)	21.20m J61 21.20m B62	or intermediate plasticity.	
22.10	100					- - - - -			
(102mm)						- - - - -	22.60m B64 22.70m U63 23.20m B66	22.70m clay is of intermediate plasticity.	
23.60	100					- - - - - -	23.30m J65  23.60m B68  23.70m J67		

Drillin	g Progress and	l Water Observ	vations	Standa	ard Pene	tration Test		Flush		General Remarks  (1) Description derived from drillers daily report (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 5.10-8.10 (diver installed to 8.00m BGL) and 35.00-38.00 BGL.  (4) UXO carried out as per the Client instruction (5) Aquifer protection installed between 16.75-15.60m BGL prior to commencing rotary drilling.	
Date	Depth	Casing	Wate Standir		Туре	Result	From - To	Туре	Returns (%)		
				22.10	S	N21	20.60 - 22.10 22.10 - 23.60 23.60 - 25.10	Water Water Water	100 100 100		
All dir	mensions i	n metres		For ex	kplana	tion of syr	mbols and	bols and Checked by:		Logged by:	Contract No.

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: Contract No. R. Clarke 4339

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### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Onshore Ground I	Investigation	for NZT		Exploratory Hole No.
Client: AECOM		-west of Redcar, North Yor E:457474.053 N:525776.34		LF\BH01
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 3 of 18

RUN	DETA	AILS						STRATA		_ <u>=</u>
Depth & TCR (SCR) (Core Ø) RQD L-			Water	Reduced	Legend	Depth		Desci	ription	Instrument/ Backfill
(Core Ø)	RQD	Frac	Wa	Level	Legend	(Thickness)		Discontinuity Detail	Main	lsr B
(102mm)				-17.22		- - 24.50	24.20m B70 24.30m J69			
25.10	93					(1.30)	25.10m B72		Stiff thinly laminated dark brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes siltstone, mudstone, coal and limestone.  (Glacial Deposits).	
(μ				-18.52	X X X X X X X X X X X X X X X X X X X	25.80	25.20m J71		25.20m clay is of intermediate plasticity.	
09.99 (102mm)							26.00m J73 26.00m U74		Stiff dark red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular and includes coal, limestone, mudstone and sandstone. (Glacial Till).	
.0.00	70						26.60m B76 26.70m J75		26.60m high strength. Clay is of intermediate plasticity.	
(102mm)						(2.85)	27.20m J77 27.20m B78			
28.10	100				<u>-</u> -	-	28.10m ES79	)		

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
24/06/2021 25/06/2021	25.10 25.10	25.10 25.10	0.00 3.11	25.10 28.10	S C	N11 50/41mm	25.10 - 26.60 26.60 - 28.10 28.10 - 29.60	Water Water Water	100 100 100	Description derived from drillers daily report.     Inspection pit dug prior to drilling.     Souble installation: 2 No. 50mm diameter slotted standpipes installed between 5.10-8.10m (diver installed to 8.00m BGL) and 35.00-38.00m BGL.     WIXO carried out as per the Client instructions.     Aquifer protection installed between 16.75-15.60m BGL prior to commencing rotary drilling.		
All dimensions in metres Scale 1:25.00					tion of syn	nbols and y Sheets	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: R. Clarke	Contract No. <b>4339</b>		

Print Date and Time: 29/11/2021 14:47:32

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RC

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### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457474.053 N:525776.34		LF\BH01
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 4 of 18

DIIN	DETA	VII C	Ι				STRATA		
RUN DETAILS  Depth TCR 2 8 8 Reduced . Der								ription	Instrument/ Backfill
& (Core Ø)	(SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		Main	Instru Bac
(00/0 2)	(41) 21	ш	_		<u></u>		28.10m ES(M)82	28.20m clay is of low plasticity.	
	21			-21.37	   	- - - 28.65	28.20m J80	20.20m day to or low placetory.	
(102mm)		NI		-21.67		- (0.30) - 28.95	28.65m ES81 28.65-28.95m non-intact.	Very weak black brown MUDSTONE residual. (Recovered as clayey sand and gravel. Gravel is subangular to	
		6				-	28.95-32.60m subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.	\ angular and includes mudstone). \ (Redcar Mudstone Formation).	
29.60						-		Weak thinly laminated brown and black MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size)). (Redcar Mudstone Formation).	
29.00	100 (100) 65					- - -			
(102mm)						-			
31.10	100					- (3.65) - -			
(102mm)	(87) 56					-			

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
							29.60 - 31.10 31.10 - 32.60	Water Water	100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install (diver installed to 8.00m BGL.	No. 50mm diameter led between 5.10-8.10m BGL) and 35.00-38.00m her the Client instructions.
	All dimensions in metres Scale 1:25.00					tion of syr ns see Ke	nbols and by Sheets	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: R. Clarke	Contract No. 4339

Print Date and Time: 29/11/2021 14:47:32

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### DRILLHOLE RECORD

Status:-**FINAL** 

Project: Prelimina	Exploratory Ho	e No.			
Client: AECOM		n-west of Redcar, North E:457474.053 N:525776		LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear L	.S250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 5 of 18	
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RUN	DETA					I	STRATA				Instrument/ Backfill
Depth &	TCR (SCR)	Fracture	Water	Reduced	Legend	Depth	Desc	ription			Strum
(Core Ø)	(SCR) RQD	Fra	>	Level	9	(Thickness)	Discontinuity Detail		Main		
32.60 (EECO) 32.80	100 (100) 0 30 (30) 12	15		-25.32		32.60	32.60-32.80m subhorizontal (5-25 degrees) very closely spaced smooth planar open infilled (clay) discontinuities.  32.80-33.10m subhorizontal (5-25 degrees) very closely spaced smooth planar open and tight infilled (clay) discontinuities.	black M weather remains (Redcar (continu Weak the MUDST	IUDSTONE pred with occass (2-40mm in Mudstone Fued)	sional fossilised size)). formation). ed grey brown y weathered.	
33.80 (105mm)	87 (87) 45	NR				- - - - - - - - - - - - - - - - - - -	33.10-34.00m no recovery.				
(102mm)	45	12					34.00-36.80m subhorizontal to subvertical (5-85 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.	34.40m	moderate	ly weak.	
35.30 (mm201)	97 (97) 62					- - -(6.00) - - -					

Drilling	vations	Standa	ard Pene	tration Test		Flush		General				
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
25/06/2021 30/06/2021	32.60 32.60	32.60 32.60	0.00 0.00				32.60 - 32.80 32.80 - 33.80 33.80 - 35.30 35.30 - 36.80	Water Water Water Water	100 100 100 100	BGL.	or to drilling. No. 50mm diameter ed between 5.10-8.10m BGL) and 35.00-38.00m er the Client instructions. talled between	
								01	lead by	Logged by	Contract No	

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:25.00		K, W.	R. Clarke	4339

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Project:							
Client:	AECOM		-west of Redcar, North Yor E:457474.053 N:525776.34		LF\BH01		
Method (Equipment Sonic/Rotary	): <sup>,</sup> Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 6 of 18		

RUN	I DETA						STRATA				mt/=
Depth	TCR (SCR) RQD	Fracture	Water	Reduced		Depth		ription			Instrument/ Backfill
& (Core Ø)	RQD	Frac	W	Level	Legend	(Thickness)	Discontinuity Detail		Mair	า	l si
36.80 (105mm)	93 (68) 51	NR 12				-	36.80-36.87m no recovery. 36.87-38.30m subhorizontal to subvertical (5-85 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.	MUDSTO	DNE partiall <sup>.</sup> Mudstone F	ed grey brown y weathered. formation).	
(102mm)	100 (63) 63			-31.32							
						-		Complete	e at 38.60m	BGL.	
						-					

Drilling Progress and Water Observations			Standa	ard Pene	tration Test		Flush			General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
30/06/2021 01/07/2021 01/07/2021	36.80 36.80 38.60	36.80 36.80 38.60	0.00 0.00 0.00				36.50 - 38.30 38.30 - 38.60	Water Water	100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install (diver installed to 8.00m BGL.	No. 50mm diameter led between 5.10-8.10m BGL) and 35.00-38.00m per the Client instructions. stalled between
All dimonsions in motros					4:£	mbols and	Chec	ked by.	Logged by:	Contract No	

For explanation of symbols and abbreviations see Key Sheets K,WAll dimensions in metres Scale 1:25.00 R. Clarke **4339** 

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.			
Client: AECOM		-west of Redcar, North ` ::457474.053 N:525776	LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 2		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 7 of 18

# Figure LF\BH01.1 LF\BH01 0.30-1.20m BGL



# Figure LF\BH01.2 LF\BH01 1.20-2.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yo ::457474.053 N:525776.3	LF\BH01		
Method (Equipment): Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 8 of 18	

# Figure LF\BH01.3 LF\BH01 2.70-3.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: LF\BH01 Sample: 2.70-3.20m BGL

# Figure LF\BH01.4 LF\BH01 3.20-4.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.			
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 9 of 18

# Figure LF\BH01.5 LF\BH01 5.70-7.20m BGL



# Figure LF\BH01.6 LF\BH01 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 2)			Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 10 of 18	

# Figure LF\BH01.7 LF\BH01 8.70-10.20m BGL



# Figure LF\BH01.8 LF\BH01 10.20-11.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01	
Method (Equipment) Sonic/Rotary	): Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 11 of 18	

# Figure LF\BH01.9 LF\BH01 11.70-13.20m BGL



# Figure LF\BH01.10 LF\BH01 13.20-14.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

	l					
Project:	ect: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)			Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 12 of 18	

# Figure LF\BH01.11 LF\BH01 14.70-16.20m BGL



# Figure LF\BH01.12 LF\BH01 16.75-19.10m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onsho	Exploratory Hole No.		
Client: AECOM	est of Redcar, North Y 57474.053 N:525776.	LF\BH01	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/C	round Level (m): 7.277	Start Date: 22/06/2021	Sheet: 13 of 18

# Figure LF\BH01.13 LF\BH01 19.10-20.60m BGL



# Figure LF\BH01.14 LF\BH01 20.60-22.10m BGL



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## **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yo ::457474.053 N:525776.3	LF\BH01		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 20			Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 14 of 18	



# Figure LF\BH01.16 LF\BH01 23.60-25.10m BGL



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## **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01	
Method (Equipment): Sonic/Rotary	Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 15 of 18	

# Figure LF\BH01.17 LF\BH01 25.10-26.60m BGL



# Figure LF\BH01.18 LF\BH01 26.60-28.10m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345			LF\BH01	
Method (Equipment Sonic/Rotary	t): y Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 16 of 18	

# Figure LF\BH01.19 LF\BH01 28.10-29.60m BGL



# Figure LF\BH01.20 LF\BH01 29.60-31.10m BGL



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## **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.						
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GE		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 17 of 18			

# Figure LF\BH01.21 LF\BH01 31.10-32.60m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: LF\BH01 Sample: 31.10-32.60m BGL annun antarantan panalan sabaga

# Figure LF\BH01.22 LF\BH01 32.60-35.30m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: LF\BH01 Sample: 32.60-35.30m BGL

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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: LF\BH01 **AECOM** E:457474.053 N:525776.345 Start Date: 22/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 18 of 18

# Figure LF\BH01.23 LF\BH01 35.30-36.80m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: LF\BH01 Sample: 35.30-36.80m BGL

# Figure LF\BH01.24 LF\BH01 36.80-38.60m BGL



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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground I		Explo	ratory Hole No.	
Client: AECOM	-west of Redcar, North Yo :457520.508 N:525835.38		LF\BH02	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet:	1 of 3

SAMPI	LES & T	ESTS				STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		Instrument/ Backfill	
0.30	ES1			5.93		(0.40) 0.40	(1) MADE GROUND (Soil, slag fill).			
0.30 0.40-0.85 0.42-1.20 0.50	PID B5 <sub>(SL1)</sub> SL1 <sub>(SS)</sub> ES2 <sub>(SL1)</sub>	<0.1ppm		5.48		(0.45) - 0.85	MADE GROUND (Grey black slightly sandy gravel with high cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded grey slag and dark grey clinker.  Cobbles are subangular and include grey slag. Slag is vesicular			
0.50 0.50 1.00	PID ES3 <sub>(SI 1)</sub>	<0.1ppm		5.13		1.20	(50-75%)). ((Driller notes boulders).			
1.00 1.00 1.20-2.70 1.20-1.95	PID SL2 <sub>(SS)</sub>	<0.1ppm				6 6 6	MADE GROUND (Grey yellow brown slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes grey slag. Slag is vesicular (100%)).			
1.20 1.50 1.50	B7 <sub>(SL2)</sub> S J8 <sub>(SL2)</sub> PID	N6 <0.1ppm				<u>(</u> 1.50)	MADE GROUND (Yellow brown sand. Sand is fine to medium). at c.1.20m BGL loose.			
1.95-2.70 2.00 2.00 2.50	B9 <sub>(SL2)</sub> J10 <sub>(SL2)</sub> PID J11 <sub>(SL2)</sub>	<0.1ppm		3.63		2.70				
2.70-4.20 2.70-4.20 2.70 2.70 3.00	B12 <sub>(SL3)</sub> S PID	50/150mm <0.1ppm				-	MADE GROUND (Grey dark grey sandy gravel with high cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to rounded and includes grey dark grey slag. Cobbles are grey dark grey subrounded to rounded and includes slag. Slag is			
3.00 3.50	J13 <sub>(SL3)</sub> PID PID	<0.1ppm <0.1ppm				(1.50)	vesicular (100%)). at c.2.70m BGL very dense. between c.2.70-4.20m BGL mild to moderate hydrogen sulphide odour noted.			
4.00	PID	<0.1ppm		2.13	$\ggg$	4.20	Sulphide ododi Noted.			
4.20-5.70 4.20-4.95 4.20 4.50 4.50	SL4 <sub>(SS)</sub> B14 <sub>(SL4)</sub> S J15 <sub>(SL4)</sub> PID	N18 <0.1ppm				- - - - -	Medium dense to dense yellow brown SAND with occasional fragments of shell (bivalve). Sand is fine to coarse. (Tidal Flat Deposits).			
4.95-5.70 5.00	B17 <sub>(SL4)</sub> J16 <sub>(SL4)</sub>	о.тррпі				- - -				
5.50 5.50 5.70-7.20	J18 <sub>(SL4)</sub> PID SL5 <sub>(SS)</sub>	<0.1ppm				- - - - -				
5.70 6.20 6.20-7.20	J19 <sub>(SL5)</sub> B20 <sub>(SL5)</sub>	N48								
6.50	PID	<0.1ppm				( <del>1</del> .30) - -				
7.00 7.20-8.70	J21 <sub>(SL5)</sub> SL6 <sub>(SS)</sub>					-	at c.7.20m BGL very dense.			
7.20-7.95 7.20 7.50	B22 <sub>(SL6)</sub> S J23 <sub>(SL6)</sub> PID	40/235mm				- - -	at o.r. Eon Doc vory donoc.			
7.50	PID "	<0.1ppm				 -				

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	n	General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
22/06/2021 22/06/2021 23/06/2021	0.00 4.20 4.20	0.00 4.20 4.20	178 178 178 178	Dry Dry	0.42 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 53 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.

All dimensions in metres Scale 1:50.00  For explanation of symb	s and Checked by:	Logged by: M.B/R.C	Contract No. 4339
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### **SONIC SAMPLE HOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.		
Client: AECOM		-west of Redcar, North Yo E:457520.508 N:525835.38	LF\BH02	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 2 of 3

SAMP	LES & TI	ESTS				STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill		
7.95-8.70 8.00	B24 <sub>(SL6)</sub> J25 <sub>(SL6)</sub>					- - - -	Medium dense to dense yellow brown SAND with occasional fragments of shell (bivalve). Sand is fine to coarse. (Tidal Flat Deposits). (continued)			
8.70-10.20 8.70-8.90 8.70 8.70 9.00 9.00-9.45 9.45-10.20 9.50	SL7(sL6) SL7(sS) ES27(sL7) S PID J28(sL7) B29(sL7) B31(sL7) J30(sL7)	N13 <0.1ppm		-2.37		8.70 - - - - - - (1.50)	Medium dense yellow brown occasionally multicolored gravelly SAND with frequent fragments of shell (including bivalve shell). Sand is fine to coarse and includes shell. Gravel is fine to coarse angular to rounded and includes mudstone and sandstone). (Tidal Flat Deposits).			
10.00 10.00 10.20-11.70 10.20-10.95 10.20 10.50	J32 <sub>(SL7)</sub> PID SL8 <sub>(SS)</sub> B33 <sub>(SL8)</sub> S J34 <sub>(SL8)</sub>	<0.1ppm N14		-3.87	l. · . · . · .		Medium dense yellow brown slightly gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded and includes mudstone and sandstone. (Tidal Flat Deposits).			
10.95-11.70 11.00 11.00	B35 <sub>(SL8)</sub> J36 <sub>(SL8)</sub> PID	<0.1ppm				- - - - -	between c.11.40-11.70m BGL yellow dark brown			
11.50 11.70-13.20 11.70-12.45 11.70 12.00 12.00 12.45-13.20 12.50	J37 <sub>(SL8)</sub> SL9 <sub>(SS)</sub> B38 <sub>(SL9)</sub> S J39 <sub>(SL9)</sub> PID B40 <sub>(SL9)</sub> J41 <sub>(SL9)</sub>	N23 <0.1ppm				- - - - - - - - (4.50)	at c.12.45m slightly silty sand.			
13.00 13.00 13.20-14.70 13.20-13.95 13.20 13.50 13.95-14.70	J42 <sub>(SL9)</sub> PID SL10 <sub>(SS)</sub> B43 <sub>(SL10)</sub> S J44 <sub>(SL10)</sub>	<0.1ppm N15				- - - - - - - - - - - -				
14.00	J46 <sub>(SL10)</sub>			-8.37		14.70				
14.70-16.20 14.70-15.00 14.70-15.45 14.70 14.70 14.70 15.00 15.45 15.45-16.20	SL11 <sub>(SS)</sub> ES48 <sub>(S11)</sub> B49 <sub>(S11)</sub> J48A <sub>(SL11)</sub> S PID PID J50 <sub>(SL11)</sub> B51 <sub>(S11)</sub>	N5 <0.1ppm <0.1ppm		2.3	X X X X X X X X X X X X X X X X X X X	(1.95)	Very soft dark brown silty CLAY with occasional shell fragments (bivalves). (Tidal Flat Deposits).			

Borin	a Progres	s and Wat	er Observa	tions		iner Sample	e Informatio	n	General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
23/06/2021 24/06/2021	10.20 10.20	10.20 10.20	178 178	3.00 3.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178 178 178 178 178 178	100 100 100 100 100	Yes Yes Yes Yes No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: M.B/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.					
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457520,508 N:525835,382						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 3 of 3			

SAMPL	SAMPLES & TESTS			STRATA							
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill			
16.00 16.00 16.20-16.65	J52 <sub>(SL11)</sub> PID UT1	<0.1ppm		-10.33		- - - - 16.65	Very soft dark brown silty CLAY with occasional shell fragments (bivalves). (Tidal Flat Deposits). (continued) at c.16.00m BGL soft.				
				-10.33	- X- 3	16.65	at c.16.00m BGL soft.  Boring complete at 16.65m BGL - continued by rotary drilling.		¥		

Borir	ng Progres	s and Wat	er Observa	ations	L	iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
24/06/2021	16.65	16.20	178	5.00	16.20 - 16.65	116	78	No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.	

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: M.B/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

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### **DRILLHOLE RECORD**

FINAL

Status:-

Project:		Expl	oratory Hole No.		
Client:	AECOM	-west of Redcar, North Yo ::457520.508 N:525835.38			LF\BH02
Method (Equipr Sonic/Ro	ment): tary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet:	1 of 18

RUN	I DETA	AILS					STRATA	· · · · · · · · · · · · · · · · · · ·	- jt_
Depth	TCR	ture	ter	Reduced		Depth		ription	Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst
16.65 (mm201)	0	SOIL		-10.33	X X X X X X X X X X X X X X X X X X X	- 16.65 - - (τ0.75) -	16.65-27.40m soil.	Very soft dark brown silty CLAY with shell fragments (bivalves). (Tidal Flat Deposits).	
17.40 (mm20)	95			-11.07	X	17.40	17.40m U53  17.80m B55  17.90m J54	Firm thinly laminated dark brown slightly sandy silty CLAY. Sand is fine to coarse. (Tidal Flat Deposits). 17.40m clay is of intermediate plasticity.	
(mm20)	93			-12.37	× × × × × × × × × × × × × × × × × × ×	18.70	18.40m ES56 18.40m ES(M)57 18.50m J58	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes coal, mudstone, sandstone and limestone. (Glacial Till).	
19.90	93						19.40m J59 19.40m B60		

Drilling	Progress and	l Water Obser	vations		Standa	rd Pene	tration Test		Flush		General		
Date	Depth	Casing	Wate Stand		Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
02/07/2021	16.65	16.20	0.0	00	19.90	S	N26	16.65 - 17.40 17.40 - 18.40 18.40 - 19.90 19.90 - 21.40	Water Water Water Water	100 100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.		
All dimensions in metres Scale 1:25.00							tion of syn	nbols and y Sheets	1	ked by:	Logged by: M.B/R.C	Contract No. 4339	

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### **DRILLHOLE RECORD**

Status:- FINAL

Project:		Explora	tory Hole No.		
Client:	AECOM	-west of Redcar, North Yor E:457520.508 N:525835.38		LF	F\BH02
Method (Equipment): Sonic/Rotary Coring (E	Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet:	of 18

RUN	DETA	AILS					STRATA		£_
Depth	TCR (SCR) RQD	Fracture Index	Water	Reduced		Depth		ription	Instrument/ Backfill
& (Core Ø)	RQD	Frac	Wa	Level	Legend	(Thickness)	Discontinuity Detail	Main	
(102mm)						-	20.90m J62 21.00m U61	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes coal, mudstone, sandstone and limestone. (Glacial Till). (continued) 21.00m clay is of low to intermediate plasticity.	
21.40	53					- - - (6.30)	21.50m J63 21.50m B64		
(102mm)					0	- - - - - - -	22.40m B66 22.50m J65		
22.90	53					- - - - - - -			
(102mm)						- - - - - - - - - - - - - - - - - - -			
24.40	93				0	- - - -	24.40m B68 24.50m J67	24.20-24.40m 1 No. cobble subangular to subrounded of mudstone.	

Drilling	Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Wat Stand	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
02/07/2021 05/07/2021	24.40 24.40	24.40 24.40	0.0 3.1	 22.90	S	N15	21.40 - 22.90 22.90 - 24.40 24.40 - 25.90	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.		
All dimensions in metres Scale 1:25.00						tion of syr	nbols and by Sheets	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: M.B/R.C	Contract No. 4339	

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Project: Preliminary Onshore Ground Investigation for NZT											
Client: AECOM												
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 3 of 18								

RUN	I DETA	AILS					STRATA							
Depth	TCR	Fracture	fer	Reduced	1	Depth		ription	Instrument/ Backfill					
(Core Ø)	(SCR) RQD	Frac	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst					
(102mm)				-18.67		25.00	24.90m ES71 24.90m ES(M)72 25.00m B70 25.10m J69	Stiff thinly laminated dark brown slightly sandy silty CLAY with silt dustings on the laminae. Sand is fine to medium. (Glacial Deposits). 25.10m clay is of high plasticity.						
25.90	100			-19.57	× × × × × × × × × × × × × × × × × × ×	25.90	26.00m J73 26.00m B74	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes coal, mudstone, sandstone and limestone. (Glacial Till).						
(102mm)						(1.50)	27.00m J76 27.00m B78	26.50m very high strength. Clay is of low plasticity.						
27.40	83 (40) 19	NR		-21.07 -21.41		(0.34)	27.40-27.74m no recovery.	(1) MUDSTONE. (Redcar Mudstone Formation).						
(102mm)		6		-21.41		21.14	27.74-28.70m subhorizontal (5-25 degrees) closely spaced smooth planar to undulating open and tight infilled (clay) discontinuities. 27.90m ES79	Weak, in places very weak, thinly laminated blue grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation).						

Drilling	g Progress and	Water Obser	vations		Standa	rd Pene	tration Test		Flush		General		
Date	Depth	Casing	Wate Stand		Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
								25.90 - 27.40 Water 100 27.40 - 28.80 Water 100		17.00m, 23.00m and 32	or to drilling. meters installed at 6.50m, .50m BGL. er the Client instructions. stalled between		
	All dimensions in metres Scale 1:25.00						tion of syr	nbols and by Sheets	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: M.B/R.C	Contract No. 4339	

$\Delta$	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Status:-**FINAL** Exploratory Hole No. LF\BH02

Client: AECOM		-west of Redcar, North Yor ::457520.508 N:525835.38			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet:	4 of 18

RUN	I DETA	AILS					int/		
Depth	TCR	ture	je.	Reduced		Depth	Descr	iption	Instrument/ Backfill
(Core Ø)	TCR (SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lust B
28.80	100 (88) 73	NI				-	28.70-29.00m non-intact.	Weak, in places very weak, thinly laminated blue grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size).	
(102mm)		10				- - - - - - - -	29.00-37.70m subhorizontal to subvertical (5-85 degrees) closely spaced planar to undulating smooth tight to open infilled (clay) discontinuities.	(Redcar Mudstone Formation). (continued)	
30.30	100 (77) 42					-			
(102mm)						-			
(102mm)	100 (81) 56					- - - - - -			

Drilling	g Progress and	vations	Standa	ard Pene	tration Test		Flush		General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
							28.80 - 30.30 30.30 - 31.80 31.80 - 33.20	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50r 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.		
	All dimensions in metres Scale 1:25.00					tion of syr ns see Ke	nbols and y Sheets	Chec	ked by:	Logged by: M.B/R.C	Contract No. 4339	

nester-le-Street, Co. Durham, DH2 2RG narf, Blackburn, BB1 5BL

22/06/2021

5 of 18

	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Ch- Unit 20 Business Development Centre, Eanam Wh
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**AECOM** 

Project:

Client:

### Status:-**DLE RECORD FINAL** Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire LF\BH02 E:457520.508 N:525835.382 Ground Level (m): 6.326 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Start Date:

DUIN	DETA	11.0		Ī				STRATA				
-								Descr	rintion			Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuit.		іриоп	Mair		nstru Bac
(Core Ø)	RQD	Ē_					Discontinuity D	etaii	Mook is			-
						(9.96)			laminate	n places very ed blue grev	weak, thinly MUDSTONE vith occasional 4-40mm in size).	
									partially	weathered v	vith occasional	
									fossilise (Redcar	d remains (2 Mudstone F	!-40mm in size). formation)	
									(continue	ed)	J	
33.20	100					-						
	100 (80) 34					-						
	34					-						
(102mm)						-						
(102						-						
						-						
33.90												
	100 (100) 65											
(102mm)	65											
(102						-						
34.30	100					-						
) F	(100) 83					-						
(102mm)	00					-						
34.70						-						
54.70	100 (100) 54					-						
	54											
(102mm)												
01)						-						
						-						
						-						
35.50	100 (100)					-						
	(100) 51					-						
Ê												
(102mm)												
36.15						-						
00.10	100 (100)					-						
	40					-						
						-						
(102mm)						-						
(102						-						

Drilling	Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
05/07/2021 06/07/2021	33.20 33.20	33.20 33.20	0.00 4.17				33.20 - 33.90 33.90 - 34.30 34.30 - 34.70 34.70 - 35.50 35.50 - 36.15 36.15 - 37.00	Water Water Water Water Water	100 100 100 100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 6.50m, 17.00m, 23.00m and 32.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 16.85-14.50m BGL prior to commencing rotary drilling.		
All dimensions in metres Scale 1:25.00						tion of syr	mbols and by Sheets	Chec	ked by:	Logged by: M.B/R.C	Contract No. 4339	

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	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4 Tel: 01772 735
		DRILLHOLE RECORD	
Project:			

Status:-	FINAL

Project:	Preliminary Onshore Ground		Exploratory Hole	No.		
Client:	AECOM		-west of Redcar, North \ -:457520.508 N:525835.		LF\BH02	
Method (Eq Sonic/	រុបipment): /Rotary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 6 of 18	

RUN	DETA	ILS					STRATA		_ if
Depth	TCR	ture	Į.	Reduced		Depth	Desc	ription	Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	l ist
37.00 (105mm)	100 (100) 16			-31.37		37.70		Weak, in places very weak, thinly laminated blue grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued)	
								Complete at 37.70m BGL.	

Drilling	Drilling Progress and Water Observations					tration Test		Flush		Ge	neral	
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Rer	marks	
06/07/2021	37.70	37.70	0.00				37.00 - 37.70	Water	100	17.00m, 23.00m and 32	or to drilling. meters installed at 6.50m, .50m BGL. er the Client instructions. stalled between	
All dimensions in metres Scale 1:25.00					tion of syr ns see Ke	mbols and y Sheets	\ \	ked by:	Logged by: M.B/R.C	Contract No. 4339		

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# **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: LF\BH02 **AECOM** E:457520.508 N:525835.382 Start Date: 22/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 6.326 7 of 18

### Figure LF\BH02.1 LF\BH02 0.40-1.20m BGL



### Figure LF\BH02.2 LF\BH02 1.20-2.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 8 of 18

# Figure LF\BH02.3 LF\BH02 2.70-4.20m BGL



# Figure LF\BH02.4 LF\BH02 4.20-5.70m BGL



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## **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 9 of 18	

### Figure LF\BH02.5 LF\BH02 5.70-7.20m BGL



# Figure LF\BH02.6 LF\BH02 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 10 of 18	

# Figure LF\BH02.7 LF\BH02 8.70-10.20m BGL



# Figure LF\BH02.8 LF\BH02 10.20-11.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client: AECOM		-west of Redcar, North Yo E:457520.508 N:525835.38	LF\BH02	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 11 of 18



# Figure LF\BH02.10 LF\BH02 13.20-14.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 12 of 18

# Figure LF\BH02.11 LF\BH02 14.70-16.20m BGL



# Figure LF\BH02.12 LF\BH02 17.40-19.40m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.	
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 13 of 18	

# Figure LF\BH02.13 LF\BH02 19.40-21.40m BGL



# Figure LF\BH02.14 LF\BH02 21.40-24.40m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 14 of 18	

# Figure LF\BH02.15 LF\BH02 24.40-25.90m BGL



### Figure LF\BH02.16 LF\BH02 25.90-27.40m BGL



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### **DRILLHOLE RECORD**

FINAL

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North E:457520.508 N:525835		LF\BH02						
Method (Equipment) Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 15 of 18						

### Figure LF\BH02.17 LF\BH02 27.40-28.80m BGL



### Figure LF\BH02.18 LF\BH02 28.80-30.30m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457520.508 N:525835.38		LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 16 of 18

# Figure LF\BH02.19 LF\BH02 30.30-31.80m BGL



# Figure LF\BH02.20 LF\BH02 31.80-33.20m BGL



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### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Ground		Exploratory Hole No.	
Client: AECOM	-west of Redcar, North Yor ::457520.508 N:525835.38		LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 17 of 18

### Figure LF\BH02.21 LF\BH02 33.20-34.70m BGL



### Figure LF\BH02.22 LF\BH02 34.70-36.15m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground I		Exploratory Hole No.	
Client: AECOM	-west of Redcar, North Yo ::457520.508 N:525835.3		LF\BH02
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 18 of 18



### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground		Explo	pratory Hole No.						
Client: AECOM		-west of Redcar, North Yor E:457252.259 N:525685.15			MS\BH02				
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longye	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet:	1 of 2					

SAMP	LES & TI	ESTS					STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrume	Backfill	
0.05-1.20 0.05-0.90 0.30 0.30 0.50 0.50	SL1 <sub>(SS)</sub> B5 <sub>(SL1)</sub> ES1 <sub>(SL1)</sub> PID ES2 <sub>(SL1)</sub> J6 <sub>(SL1)</sub>	0.1ppm				(0.90)	MADE GROUND (Brown black slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag. Slag is vesicular (100%)).			
0.50 0.90-1.20 1.00	J6 <sub>(SL1)</sub> PID B7 <sub>(SL1)</sub> ES3 <sub>(SL1)</sub>	0.1ppm		3.92		0.90	MADE GROUND (Yellow brown sand. Sand is fine to coarse).			
1.00 1.00 1.20-2.70 1.20-1.60	J8 <sub>(SL1)</sub> PID SL2 <sub>(SS)</sub>	<0.1ppm		3.22		(0.40) 1.60	MADE GROUND (Very dense blue light grey clayey sand and gravel with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag. Cobbles			
1.20 1.50 1.60-2.25 2.00	B9 <sub>(SL2)</sub> S PID B11 <sub>(SL2)</sub> ES4 <sub>(SL2)</sub>	50/285mm <0.1ppm		2.57		(0.65) - - - 2.25	\are subrounded and include slag. Slag is vesicular (100%)).  MADE GROUND (Yellow brown slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes grey slag. Slag is vesicular (100%)).			
2.00 2.00 2.25-2.70 2.25	J10 <sub>(SL2)</sub> PID ES13 <sub>(SL2)</sub>	<0.1ppm				- - - -	MADE GROUND (Dark blue silty sand with occasional fragments of shell (bivalves). Sand is fine to coarse. Mild hydrocarbon			
2.50 2.70-4.20 2.70-3.40	J12 <sub>(SL2)</sub> SL3 <sub>(SS)</sub> B14 <sub>(SL3)</sub>	<0.1ppm				(1.15) - -	odour). at c.2.70m BGL dense. between c.2.70-3.40m BGL dark blue brown.			
2.70 3.00 3.00 3.40-4.20	S J15 <sub>(SL3)</sub> PID B16 <sub>(SL3)</sub>	N32 <0.1ppm		1.42		3.40	Dense yellow brown SAND with occasional fragments of shell.			
3.40 3.50	J17 <sub>(SL3)</sub>	<0.1ppm				-	Sand is fine to coarse. (Tidal Flat Deposits).			
4.00 4.00 4.20-5.70 4.20-4.95 4.20 4.50	J18 <sub>(SL3)</sub> PID SL4 <sub>(SS)</sub> B19 <sub>(SL4)</sub> S	<0.1ppm N41				- - - - -				
4.95-5.70 5.00 5.00	J20 <sub>(SL4)</sub> B21 <sub>(SL4)</sub> J22 <sub>(SL4)</sub> PID	<0.1ppm				- - - - - -				
5.50 5.70-7.20	J23 <sub>(SL4)</sub>					- - -				
5.70-7.20 5.70-6.35 5.70 6.00 6.00 6.35-6.75 6.50	SL5 <sub>(SS)</sub> B24 <sub>(SL5)</sub> S J25 <sub>(SL5)</sub> PID B26 <sub>(SL5)</sub> J27 <sub>(SL5)</sub>	N32 <0.1ppm				- - - - - -	between c.6.35-6.75m BGL with frequent shell fragments (approximately 50% is fragments of shell).			
6.75-7.20	B28 <sub>(SL5)</sub>					- -				
7.00 7.00 7.20-8.70 7.20-7.95 7.20 7.50	J29 PID SL6 <sub>(SS)</sub> B30 <sub>(SL6)</sub> S J31 <sub>(SL6)</sub>	<0.1ppm N41				(7.70) - - - -	at c.7.40m BGL 1 No. cobble of subangular grey limestone.			
7.50	33 I (SL6)					-				

Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	n	General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
25/06/2021	0.00	0.00	178		0.05 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 13.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M.B/R.C	<b>4339</b>

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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Exploratory Hole No.									
Client:	AECOM AECOM Location:  North-west of Redcar, North Yorkshire E:457252.259 N:525685.159									
Method (Equipme Sonic/Openh	nt): ole/Coring (Boart Longyear LS250/Boart Longye		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 2 of 2					

SAMP	LES & TE	ESTS			1		STRATA	ent/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
7.95-8.70 8.00 8.00	B32 <sub>(SL6)</sub> J33 <sub>(SL6)</sub> PID	<0.1ppm				- - - -	Dense yellow brown SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits). <i>(continued)</i>	
8.50 8.70-10.20 8.70-9.45 8.70 9.00 9.00 9.45-10.20 9.50	J34 <sub>(SL6)</sub> SL7 <sub>(SS)</sub> B35 <sub>(SL7)</sub> S J36 <sub>(SL7)</sub> PID B37 <sub>(SL7)</sub> J38 <sub>(SL7)</sub>	N43 <0.1ppm					between c.9.60-11.10m BGL slightly saturated.	
10.20-11.70 10.20-10.40 10.20 10.20 10.40-11.10 10.50 11.00	SL8 <sub>(SS)</sub> ES39 <sub>(SL8)</sub> S PID B41 <sub>(SL8)</sub> J40 <sub>(SL8)</sub> J42 <sub>(SL8)</sub>	N43 <0.1ppm		-6.28			at c.10.40m BGL slightly silty sand.	
11.20-11.40 11.20 11.20 11.40-11.70 11.50 11.70-12.15	ES43 <sub>(SL8)</sub> ES44 <sub>(SL8)</sub> PID B45 <sub>(SL8)</sub> J46 <sub>(SL8)</sub> UT1	<0.1ppm (27)		-7.33	× × × × × × × × × × × × × × × × × × ×	(1.05) (1.05) (1.05) (1.05)	Soft dark brown slightly sandy CLAY/SILT. Sand is fine to medium. (Tidal Flat Deposits). at c.11.40m BGL clay/silt is of low plasticity. at c.11.70m BGL medium strength. Clay is of low to intermediate plasticity.	
							Boring complete at 12.15m BGL - continued by rotary drilling.	

Borin	g Progres	s and Wat	er Observa	itions	Liner Sample Information				General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
25/06/2021 28/06/2021 28/06/2021	8.70 8.70 12.15	8.70 8.70 11.70	178 178 178	4.20 3.00	8.70 - 10.20 10.20 - 11.70 11.70 - 12.15	178 178 116	100 100 89	Yes Yes No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 13.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.

Checked by: Logged by: M.B/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R

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### **DRILLHOLE RECORD**

Project:	oject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		orkshire 59		MS\BH02						
Method (Equipment Sonic/Openhole	): e/Coring (Boart Longyear LS250/Boart Longy		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet:	1 of 14					

RUN	DETA	AILS					STRATA		ent/
Depth	TCR (SCR) RQD	Fracture Index	Water	Reduced	Legend	Depth	Γ	Description	Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Legend	(Thickness)	Discontinuity Detail	Main	a si
		RO		-7.33	X X X X X X X X X X X X X X X X X X X	- 12.15 - - -	12.15-12.70m rotary openhole drilling.	Soft dark brown slightly sandy silty CLAY. (Tidal Flat Deposits).	
12.70 (105mm)	33	SOIL			× × × × × × × × × × × × × × × × × × ×	- _(1.45) -	12.70-24.00m soil.	13.00m clay is of low to	
				-8.78	X - X - X - X - X - X - X - X - X - X -	- - - - 13.60	13.10m J47	intermediate plasticity.	
(102mm)				3.70	Xo X X X X X X X X X X X X X X X X X X	-	13.60m B50 13.70m J49	Firm dark brown slightly sandy silty CLAY with fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
14.50	100				X	- - -(2.20) - -	15.00m ES55		
(102mm)				-10.98	X X X X X X X X X X X X X X X X X X X	15.80	15.00m ES55 15.00m ES(M)56 15.10m J51 15.10m B52	15.10m clay is of high plasticity.	
				10.50	0	.5.50	15.80m B54		
16.00	100					_	15.90m J53		
	100				<u> </u>	-	16.00m J1 16.00m ES57		

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks  (1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 13.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
29/06/2021	12.15	11.70	5.12	16.00	S	N26	12.70 - 13.00 13.00 - 14.50 14.50 - 16.00 16.00 - 17.50	Water Water Water Water	100 100 100 100			
	nensions i Scale 1:25					tion of syr ns see Ke	nbols and y Sheets	\ \	ked by:	Logged by: Contract No M.B/R.C 4339		

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### **DRILLHOLE RECORD**

Project:	Project: Preliminary Onshore Ground Investigation for NZT								
Client: AEC	ient:  AECOM  AECOM  Location:  North-west of Redcar, North Yorkshire  E:457252.259 N:525685.159								
Method (Equipment): Sonic/Openhole/Coring (Boart	Longyear LS250/Boart Longye		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 2	of 14			

RUN	I DETA	ILS					STRATA	· · · · · · · · · · · · · · · · · · ·	
Depth	TCR	ture	ter	Reduced	1	Depth	Desc	ription	Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
(102mm)						-	16.00m ES(M)58 16.10m J59 16.10m B60	Stiff dark red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular and includes coal, mudstone, sandstone and limestone. (Glacial Till). (continued)	
17.50						-	16.85m B62 17.00m J61		
	93					- - - - -(4.20)	17.50m J63	17.50m clay is of intermediate plasticity.	
(102mm)						-	18.10m J65 18.25m B66		
(19.00 (mm201)	100			-15.18			19.00m J2 19.00m B68 19.10m J67		
					× -× -	-	20.00m B70	20.00m clay is of intermediate plasticity.	

Drilling	g Progress and	Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
				19.00	S	N17	17.50 - 19.00 19.00 - 20.50	Water Water	100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.		
	nensions ii Scale 1:25						mbols and Checked by: Logged by: ey Sheets K.W. M.B/R.C			Contract No. 4339		

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

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### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Ground I		Exploratory Hole No.					
Client: AECOM	COM Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159						
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longye	ear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 3 of 14			

RUN	DETA	ILS					STRATA		tu
Depth &	TCR (SCR) RQD	Fracture Index	Water	Reduced	Legend	Depth	D	Description	Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Legenu	(Thickness)	Discontinuity Detail	Main	l sr
20.50	93				*		20.10m J69 20.50m B71	Firm thinly laminated dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes coal, limestone, mudstone and sandstone. (Glacial Deposits). (continued)	
(102mm)				-16.98	* * * * * * * * * * * * * * * * * * *	(1.80)  - - - - - - - 21.80	21.25m U72	21.25m clay is of intermediate plasticity.	
				-16.98	<u>×°×-</u>	21.80	21.80m J73	Firm red brown slightly sandy slightly gravelly CLAY. Gravel is fine to	
22.00	100				  	- -	22.00m J3 22.00m ES74 22.20m B75	coarse subrounded to subangular and includes sandstone, limestone and mudstone.  (Glacial Till).	
						-	22.25.11 510	22.20m clay is of intermediate plasticity.	
(102mm)						- - - (2.08)	22.50m J76	from 22.50m stiff.	
						- - -	23.00m U77	23.00m very high strength. Clay is of intermediate plasticity.	
23.50	31 (0) 0					-	23.50m ES78		
		NR		-19.06 -19.18	<del>-</del>	23.88	24.00-26.00m no recovery.	(1) Red brown gravelly CLAY. (Glacial Till).	

Drilling	Progress and	l Water Obser	vations		Standa	rd Penet	ration Test		Flush		General		
Date	Depth	Casing	Wate Standi		Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks	
29/06/2021 30/06/2021	23.50 23.50	23.50 23.50	0.00 7.20	11	22.00	Ø	N26	20.50 - 22.00 22.00 - 23.50 23.50 - 24.80	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 13.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.		
	nensions ii Scale 1:25						tion of syn	nbols and y Sheets		cked by:	Logged by: Contract N M.B/R.C 4339		

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

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### **DRILLHOLE RECORD**

Project:	Project: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yo E:457252.259 N:525685.1	=	MS\BH02				
Method (Equipment Sonic/Openho	ու)։ de/Coring (Boart Longyear LS250/Boart Longy		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet:	4 of 14			

RUN	I DETA	AILS					STRATA			
Depth	TCR	Fracture	Water	Reduced	Legend	Depth	Descr	ription	Instrument/ Backfill	
(Core Ø)	(SCR) RQD	Frac	Wa	Level	Legena	(Thickness)	Discontinuity Detail	Main	lnst B	
(mm201)						-		(1) Grey MUDSTONE. (Driller describes as 'very weak with hard bands'). (Redcar Mudstone Deposits). (continued)		
(102mm)	0 (0) 0					- <del>(</del> 2.00) - -				
(102mm)	0 (0) 0					- - -				
25.80	60					-				
(102mm)		10 NI		-21.18		26.00	26.00-26.20m horizontal (0-5 degrees) closely spaced planar to undulating rough open infilled (clayey gravel) discontinuities. 26.20-26.30m non-intact.	Weak thinly laminated black grey MUDSTONE partly weathered with occasional fossilised remains (2mm-40mm in size).		
26.30 (mm201)	100	8				- - -	26.30-26.80m horizontal (0-5 degrees) closely spaced planar to undulating rough and smooth open infilled (clayey gravel) discontinuities.	(Redcar Mudstone Formation).		
(102mm)	100 (43) 0	14				- - - -	26.80-27.40m horizontal to oblique (0-45 degrees) closely spaced smooth planar to undulating open and tight infilled (clay) discontinuities.			
27.40 (mm201)	100 (100) 57	12				- (3.00) - - -	27.40-28.10m subhorizontal (5-25 degrees) closely spaced smooth planar to undulating open and tight infilled (clay) discontinuities.			
28.10	100	10				-				

Drilling	g Progress and	l Water Obser	vations	Stand	ard Pene	tration Test		Flush		Ge	neral	
Date	Depth	Casing	Wate Standi		Туре	Result	From - To	Туре	Returns (%)	Rer	marks	
30/06/2021 01/07/2021	26.80 26.80	26.80 26.80	0.00		c c	N37 50/82mm 50/8mm	24.80 - 25.30 25.30 - 25.80 25.80 - 26.30 26.30 - 26.80 26.80 - 27.40 27.40 - 28.10 28.10 - 29.00	Water Water Water Water Water Water	100 100 100 100 100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 7.50m, 13.50m, 18.00m and 26.50m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 12.15-10.50m BGL prior to commencing rotary drilling.		
All dimensions in metres Scale 1:25.00					tion of syr	mbols and by Sheets	<i> </i>	ked by:	Logged by: M.B/R.C	Contract No. 4339		

<u> </u>	Regional Office:	Unit 20 Business Development Centre, E			35 300 Fax: 01772 73		
		DRIL	LHOLE I	RECORD		Status:-	FINAL
Project:	Prel	iminary Onshore Ground	Investigation	for NZT		Explo	ratory Hole No.
Client:	AECOM			-west of Redcar, 1 :457252.259 N:5		ı	MS\BH02
Method (Equipment): Sonic/Openhole/Coring	g (Boart Lonç	gyear LS250/Boart Longye		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet:	5 of 14

RUN	I DETA	ILS					STRATA		_ t
Depth & (Core Ø)	TCR (SCR) RQD	Fracture	ter	Reduced	100000	Depth	Descr	iption	Instrument/ Backfill
(Core Ø)		Frac	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lsi a
(102mm)	(100) 83			04.40		-	28.10-29.00m subhorizontal (5-25 degrees) closely spaced smooth planar to undulating open and tight infilled (clay) discontinuities.	Weak thinly laminated black grey MUDSTONE partly weathered with occasional fossilised remains (2mm-40mm in size). (Redcar Mudstone Formation). (continued)  28.70m very weak.	
				-24.18		29.00		Complete at 29.00m BGL.	<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>

Drilling	Drilling Progress and Water Observations			Standa	ard Pene	tration Test		Flush		Ge	neral
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)		
01/07/2021	29.00	29.00	0.00							(2) Inspection pit dug pri (3) 4 No. vibrating piezor 13.50m, 18.00m and 26.	meters installed at 7.50m, .50m BGL. er the Client instructions. stalled between
All dimensions in metres For explanation of sy Scale 1:25.00 abbreviations see K						Chec	cked by:	Logged by: M.B/R.C	Contract No. 4339		

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

### **DRILLHOLE RECORD**

**FINAL** 

Project:		Exploratory Hole No.		
Client:	AECOM	-west of Redcar, North You :457252.259 N:525685.1		MS\BH02
Method (Equipment): Sonic/Openhole/Co	oring (Boart Longyear LS250/Boart Longy	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 6 of 14

# Figure MS\BH02.1 MS\BH02 0.05-1.20m BGL



# Figure MS\BH02.2 MS\BH02 1.20-2.70m BGL



Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



### **DRILLHOLE RECORD**

**FINAL** 

Project:	Exploratory Hole No.			
Client:	AECOM	-west of Redcar, North Yo E:457252.259 N:525685.1	MS\BH02	
Method (Equipment): Sonic/Openhole/	Coring (Boart Longyear LS250/Boart Longye	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 7 of 14



# Figure MS\BH02.4 MS\BH02 4.20-5.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH02 Sample: 4.20-5.70m BGL

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.	
Client: AECOM	-west of Redcar, North Yo E:457252.259 N:525685.15		MS\BH02
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longy	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 8 of 14



# Figure MS\BH02.6 MS\BH02 7.20-8.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH02 Sample: 7.20-8.70m BGL

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore G	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North \ :457252.259 N:525685		MS\BH02
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 9 of 14



# Figure MS\BH02.8 MS\BH02 10.20-11.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH02 Sample: 10.20-11.70m BGL

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.							
Client: AECOM		-west of Redcar, North \ E:457252.259 N:525685	MS\BH02						
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longy	year DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 10 of 14					



# Figure MS\BH02.10 MS\BH02 14.50-16.00m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.			
Client: AECOM	Location: North E	MS\BH02		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longye		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 11 of 14



# Figure MS\BH02.12 MS\BH02 17.50-19.00m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH02 **AECOM** Start Date: 25/06/2021 Method (Equipment):
Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520) 12 of 14

# Figure MS\BH02.13 MS\BH02 20.50-22.00m BGL



### Figure MS\BH02.14 MS\BH02 22.00-23.50m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

	<b>.</b>								
Project: Preliminary Onshore Ground	Exploratory Hole No.								
Client: AECOM		-west of Redcar, North Yo E:457252.259 N:525685.1		MS\BH02					
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart LS250		Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 13 of 14					



# Figure MS\BH02.16 MS\BH02 26.80-28.10m BGL



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### **DRILLHOLE RECORD**

Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\BH02 **AECOM** 

Method (Equipment):
Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)

Start Date: 25/06/2021

14 of 14

**FINAL** 



### **SONIC SAMPLE HOLE RECORD**

	· · · · · · · · · · · · · · · · · · ·								
Project: Preliminary Onshore Ground	Expl	oratory Hole No.							
Client: AECOM		-west of Redcar, North Yor E:457301.31 N:525582.70		MS\BH03					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 4.67	Start Date: 22/06/2021	Sheet:	1 of 2				

SAMPLES & TESTS STRATA					ant/			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.10-1.20 0.10-0.55 0.30 0.30	SL1 <sub>(SS)</sub> B7 <sub>(SL1)</sub> ES1 J6 <sub>(SL1)</sub>			4.12		(0.55) - 0.55	MADE GROUND (Black slightly slity slightly gravelly sand. Sand is fine to coarse and includes ash. Gravel is fine to coarse subangular to subrounded and includes grey slag and clinker. Slag is 50-75%).	0 0 V
0.30 0.50 0.50 0.55-1.20 1.00	J6 <sub>(SL1)</sub> PID ES2 PID B9 <sub>(SL1)</sub> ES3	<0.1ppm <0.1ppm				(0.80)	MADE GROUND (Grey brown slightly silty slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes grey slag. Slag is vesicular (50-75%)).	
1.00 1.00 1.20-2.70 1.20 1.35-1.75	J8 <sub>(SL1)</sub> PID SL2 <sub>(SS)</sub> S	0.1ppm N30		2.92		1.35 (0.40) 1.75	MADE GROUND (Grey black slightly silty sand and gravel. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes slag and clinker. Slag is 50-75%). (Engineer notes slightly saturated).	
1.89-2.70	PID B13 <sub>(SL2)</sub> EW100D EW100S	<0.1ppm			×		Dark blue yellow brown silty SAND with occasional pockets of dark blue sand and fragments of shell. Sand is fine to coarse. Mild hydrocarbon odour relating to sand pockets. (Engineer notes locally saturated).	
2.00 2.00 2.00 2.50 2.50	ES4 J12 <sub>(SL2)</sub> PID ES5 PID	0.3ppm		1.87	×	2.80	(Tidal Flat Deposits) at c.1.20m BGL medium dense and dense. at c.2.70m BGL very dense.	
2.70-4.20 2.70 2.80-3.45	SL3 <sub>(SS)</sub> S B16 <sub>(SL3)</sub> ES14	<0.1ppm 56/220mm				-	Dense to very dense yellow brown SAND with occasional fragments of shell. Sand is fine to coarse. (Engineer notes locally saturated).	
3.00-3.30 3.00 3.00 3.45-4.20 3.50 4.00	J15 <sub>(SL3)</sub> PID B18 <sub>(SL3)</sub> J17 <sub>(SL3)</sub>	<0.1ppm				- - - - - -	between c.2.80-3.40m BGL gravelly sand. Gravel is fine to coarse subrounded to rounded and includes mudstone.	
4.20-5.70 4.20-4.95 4.20 4.50 4.50 4.95-5.70 5.00	SL4 <sub>(SS)</sub> B20 <sub>(SL4)</sub> S J21 <sub>(SL4)</sub> PID B22 <sub>(SL4)</sub> J23 <sub>(SL4)</sub>	N51 <0.1ppm				- - - - - - - -		
5.50 5.50 5.70-7.20 5.70-6.45 5.70	J24 <sub>(SL4)</sub> PID SL5 <sub>(SS)</sub> B25 <sub>(SL5)</sub> S	<0.1ppm				- - - - - - (6.55)		
6.00 6.45-7.20 6.50 6.50	J26 <sub>(SL5)</sub> B27 <sub>(SL5)</sub> J28 <sub>(SL5)</sub> PID	<0.1ppm				-  -  -  -  -  -	at c.6.45m BGL slightly silty sand.	
7.00 7.20-8.70 7.20-7.95 7.20	J29 <sub>(SL5)</sub> SL6 <sub>(SS)</sub> B30 <sub>(SL6)</sub> S	N43				- - - - -	from c.7.20m BGL dense.	
7.50 7.50	J31 <sub>(SL6)</sub> PID	<0.1ppm				-		

Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing					Remarks
22/06/2021 22/06/2021 23/06/2021	0.00 2.70 2.70	0.00 2.70 2.70	178 178 178 178	2.50 1.70	0.10 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) ES(M) = Environmental Sample with Methanol preservative. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.20-2.70m and 25.50-28.50m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 12.15-9.90m BGL prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M.B/R.C	<b>4339</b>

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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Exploratory Hole No.								
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.31 N:525582.70								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 4.67	Start Date: 22/06/2021	Sheet: 2 of 2					

SAMP	LES & TI	ESTS				STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.95-8.70 8.00 8.50 8.50 8.70-10.20 8.70-9.35 8.70 9.00	B32 <sub>(SL6)</sub> J33 <sub>(SL6)</sub> J34 <sub>(SL6)</sub> PID SL7 <sub>(SS)</sub> B35 <sub>(SL7)</sub> S J36 <sub>(SL7)</sub>	<0.1ppm N35		-4.68		- - - - - - - - - - - - - - - - - - -	at c.7.95m BGL slightly silty sand. Dense to very dense yellow brown SAND with occasional fragments of shell. Sand is fine to coarse. (Engineer notes locally saturated). (continued)		
9.35-10.20 9.50 9.50-9.80 9.50 10.00	B37 <sub>(SL7)</sub> J38 <sub>(SL7)</sub> ES39 <sub>(SL7)</sub> PID	<0.1ppm				(1.15)	Yellow brown black clayey gravelly SAND with rare pockets of soft brown very sandy silty clay. Gravel is coarse subrounded to rounded and includes mudstone. (Tidal Flat Deposits).		
10.20-11.70 10.20 10.20 10.50-11.00 10.50 11.00-11.20 11.00 11.20-11.20 11.20 11.20 11.30-11.70	J40 <sub>(SL7)</sub> SL8 <sub>(SS)</sub> J41 <sub>(SL8)</sub> S B42 <sub>(SL8)</sub> J43 <sub>(SL8)</sub> PID ES44 <sub>(SL8)</sub> PID ES45 ES(M)45 <sub>(SL</sub> PID B47 <sub>(SL8)</sub>	N4 <0.1ppm <0.1ppm   8) <0.1ppm		-5.83 -6.33		10.50 - (0.50) - 11.00 - - - - - (1.25)	at c.10.20m BGL very loose.  Very soft dark brown slightly sandy CLAY with occasional fragments of shell. (Tidal Flat Deposits).  at c.10.50m BGL clay is of low plasticity.  Soft thinly laminated dark brown sandy silty CLAY. (Tidal Flat Deposits).  at c.11.70m BGL clay is of low plasticity.		
11.50 11.70-12.15 12.00	J46 <sub>(SL8)</sub> UT1 PID	(25) <0.1ppm		-7.58	× -× -: × - × -:	- 12.25 - 12.25 	Boring complete at 12.25m BGL - continued by rotary drilling.		
						-			
						-			
						-			

Borin	Boring Progress and Water Observations					iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing					Remarks
23/06/2021	12.25	11.70	178		8.70 - 10.20 10.20 - 11.70 11.70 - 12.15	178 178 116	100 100 67	Yes Yes No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) ES(M) = Environmental Sample with Methanol preservative. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.20-2.70m and 25.50-28.50m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 12.15-9.90m BGL prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K, W.	M.B/R.C	<b>4339</b>

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### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground	Preliminary Onshore Ground Investigation for NZT										
Client: AECOM		-west of Redcar, North Yor E:457301.314 N:525582.69		MS\BH03							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea	ır DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet:	1 of 14						

				I					
RUN	DETA				1		STRATA		Instrument/ Backfill
Depth &	TCR (SCR) RQD	Fracture	Water	Reduced	Legend	Depth	Desc	cription	Strum
(Core Ø)	RQD	l	>	Level		(Thickness)	Discontinuity Detail	Main	Ĕ
12.70		RO		-7.58	* - * - * - * - * - * - * - * - * - * -	- 12.25 - - - (0.75)	12.25-12.70m rotary openhole.	Soft thinly laminated dark brown very silty sandy CLAY. (Tidal Flat Deposits).	
00.81 (102mm)	83	SOIL		-8.33	X X X X X X X X X X X X X X X X X X X	- - 13.00	12.70-23.50m soil. 12.80m J48	12.80m clay is of low plasticity.	
(102mm)	0				× × × × × × × × × × × × × × × × × × ×	-		(1) Brown SILT/CLAY. (Driller describes as 'very soft'). (Tidal Flat Deposits).	
13.50 (105mm)	0				× × × × × × × × × × × × × × × × × × ×	-(1.00) - - -			
4.00 (102mm)	100			-9.33	×	14.00 - - -	14.00m J49 14.00m E550 14.10m ES(M)51	Firm thinly laminated dark brown slightly sandy silty CLAY. (Driller notes red sand bands). (Tidal Flat/Glacial Deposits).	
4.50	100			-10.33	X - X - X - X - X - X - X - X - X - X -	(1.00) - - - - - 15.00	14.50m J1 14.50m B54 14.60m J53	14.50m clay is of high plasticity with occasional pockets of peat.	
(102mm)				-10.33			15.10m J55	Firm to stiff dark red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to subangular and includes sandstone, mudstone, limestone and coal. (Glacial Till).  15.10m clay is of intermediate plasticity.	
6.00	100					- - -	15.90m J57 15.90m ES58 16.00m ES(M)52 16.10m J59 16.10m U60	16.10m clay is of intermediate plasticity.	

Drilling Progress and Water Observations					ard Pene	tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	th Type Result From - To Type Returns (%)				Rer	marks	
24/06/2021	12.25	11.70	3.69	14.50	14.50 S N6 12.70 - 13.00 13.00 - 13.50 13.50 - 14.00 14.00 - 14.50 14.50 - 16.00 16.00 - 17.50				100 100 100 100 100 100	Inspection pit dug prior to	vith Methanol preservative. No. 50mm diameter led between 1.20-2.70m (5) UXO carried out as s. (6) Aquifer protection 9.90m BGL prior to
All dimensions in metres For explanation Scale 1:25.00 abbreviations s							Chec	ked by: .W.	Logged by: M.B/R.C	Contract No. 4339	

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### **DRILLHOLE RECORD**

Project: Prelimina	Preliminary Onshore Ground Investigation for NZT										
Client: AECOM	Location: Nor	th-west of Redcar, North Y E:457301.314 N:525582.	MS\BH	103							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear L	.S250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 2 of 1	4						

RUN	I DETA	ILS					STRATA	<u>'</u>	
Depth	TCR (SCR) RQD	ture	Water	Reduced	Legend	Depth		ription	Instrument/ Backfill
(Core Ø)	RQD	Fracture Index	Wa	Level	Legena	(Thickness)	Discontinuity Detail	Main	lnst
(102mm)						-	16.50m J61 16.50m B62	Firm to stiff dark red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to subangular and includes sandstone, mudstone, limestone and coal. (Glacial Till). (continued) 16.50m clay is of intermediate plasticity.	
17.50	100					- - - - -	17.40m J63 17.50m J2 17.60m J64 17.60m B65		
(102mm)						- - - -	18.20m J66 18.20m B67		
19.00	100					- - - - - - _(8.75)	19.10m J68 19.10m U70 19.10m ES69	19.10m soft to firm fissured slightly sandy clay with some silt dustings. Clay is of intermediate plasticity.	
(102mm)						- - - -	19.90m J71 19.90m B72 19.90m ES(M)73		

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Depth Type Result From - To Type Returns (%)					Remarks		
				17.50	17.50 S N16 17.50 - 19.00 19.00 - 20.50				100 100	Inspection pit dug prior to	with Methanol preservative. No. 50mm diameter led between 1.20-2.70m (5) UXO carried out as s. (6) Aquifer protection 9.90m BGL prior to	
All dimensions in metres Scale 1:25.00  For explanation of sym abbreviations see Ke						Chec	ked by:	Logged by: M.B/R.C	Contract No. 4339			

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### **DRILLHOLE RECORD**

Project:	et: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North Yo E:457301.314 N:525582.69			MS\BH03				
Method (Equipme Sonic/Rotar	nt): y Coring (Boart Longyear LS250/Boart Longyea	r DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet:	3 of 14				

N DETAILS STRATA								_ rt
TCR	ture	Te.	Reduced		Depth	Desci	ription	Instrument/ Backfill
) RQD	Frac	Wa	Level	Legena	(Thickness)	Discontinuity Detail	Main	Inst
90					-	20.50m J3 20.50m B75 20.60m J74	Firm to stiff dark red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to subangular and includes sandstone, mudstone, limestone and coal. (Glacial Till). (continued)	
					-	21.20m J76 21.20m B77	21.20m clay is of low plasticity.	
100					-	22.10m J78 22.10m B79		
					- - - -	22.90m J80 22.90m B81	22.90m clay is of high plasticity.	
100 (39) 7			-10.00		- 22.75	23.40m ES82 23.50m J4	23.50m clay is of low plasticity.	
	12 NI		-19.08			23.75-24.15m subhorizontal (5-25 degrees) oblique (25-45 degrees) closely to very closely spaced planar to undulating smooth open and tight clean and infilled (clay) discontinuities.	Weak thinly laminated dark grey MUDSTONE partially to distinctly weathered with numerous fossilised remains (2-40mm in size). (Redcar Mudstone Formation).	
	TCR (SCR) 90	TCR (SCR) 90 90 100 (39) 7	TCR (SCR) 100 (S	TCR (SCR) 2	TCR (SCR) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TCR (SCR) Papul Pa	TCR (SCR)	TCR   Secure   Legend   Description   Desc

Drilling	Standa	ard Pene	tration Test		Flush		General					
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
24/06/2021 25/06/2021	22.00 22.00	22.00 22.00	0.00	20.50 23.50	SS	N13 N41	20.50 - 22.00 22.00 - 23.50 23.50 - 25.00	Water Water Water	100 100 100	Inspection pit dug prior to	with Methanol preservative. No. 50mm diameter led between 1.20-2.70m (5) UXO carried out as s. (6) Aquifer protection 9.90m BGL prior to	
All dimensions in metres Scale 1:25.00  For explanation of sym abbreviations see Key								Check	ked by:	Logged by: M.B/R.C	Contract No. 4339	

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

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### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explorate	ory Hole No.
Client:	AECOM		-west of Redcar, North Yo E:457301.314 N:525582.69		мѕ	\BH03
Method (Equipment Sonic/Rotary	): Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 4	of 14

DII	N DETA	II C					STRATA				$\overline{\top}$
-								scription			Instrument/ Backfill
Depth & (Core Ø	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		escription	NA-t-		nstru Bac
<u> </u>		<u>г</u> _				,	Discontinuity Detail	\\\   + 4b	Main		
(102mm									ninly laminate ONE partially		
2										erous fossilised	
		12				_	24.50-24.80m subhorizontal (5-25 degrees) oblic (25-45 degrees) closely to very closely spaced plan	ar (Redcar	s (2-40mm in s Mudstone Fo		000
						}-	to undulating smooth open and tight clean and infill (clay) discontinuities.	d (continu	red)	,	
		NI				-	24.80-25.00m non-intact.				100171
25.00						_					000
25.00	100	8				-	25.00-26.30m subhorizontal (5-25 degrees) close	ely			000
	(71) 34					Ī	spaced planar to undulating smooth open and tight clean discontinuities.				000
											000
						-					00 74
						-					000
						-					1°0 0
(102mm)						-					
201						-					0000
						-					000
		ND				-		26.20m	moderately	y weak.	000
		NR				(5.35)	26.30-26.50m no recovery.				00
26.50	100	2				-	26.50-27.05m horizontal (0-5 degrees) medium				
	(100) 59					-	spaced planar to undulating smooth open clean discontinuities.				000
						-					10011
											000
											000
		6					27.05-28.00m subhorizontal (5-25 degrees) close	ely			
Į į						_	spaced smooth planar open clean discontinuities.				0 0
(102 mm)						-					
`						-					000
						}					0000
						-					°0  4
						Ī					
28.00		_									000
	100 (91)	7				-	28.00-29.10m subhorizontal (5-25 degrees) close spaced smooth planar open and tight clean	ly			0 0
	43					-	discontinuities.				

Drilling	g Progress and	l Water Observ	vations	Standa	ard Pene	tration Test	Flush			General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
25/06/2021 28/06/2021	26.50 26.50	26.50 26.50	0.00				25.00 - 26.50 26.50 - 28.00 28.00 - 29.10	.50 Water 100 .00 Water 100		Inspection pit dug prior to	with Methanol preservative. No. 50mm diameter led between 1.20-2.70m (5) UXO carried out as s. (6) Aquifer protection 9.90m BGL prior to	
	nensions ii Scale 1:25						symbols and Checked by: Key Sheets K.W.		Logged by: M.B/R.C	Contract No. 4339		

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 387 Tel: 01772 735 300 Fax: 01772 73	
<b>E</b> <b>G</b>		DRILLHOLE RECORD		State
Project:	Pre	liminary Onshore Ground Investigation for NZT		E

Client:

**AECOM** 

**FINAL** Exploratory Hole No. North-west of Redcar, North Yorkshire MS\BH03 Start Date: 22/06/2021

Method (	Equipmo	nt\.							E:457301.	314 N:5	25582.69	9 Start Date:	Sheet:	
Sonic	:/Rotar	y Cori	ng (B	oart Lor	ngyear L	S250/Boa	art Longyea	r DB520)	Ground Lev	4.672		22/06/2021	5 of 14	
RUN	DETA	AILS							STRATA	١				nt/
Depth &	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth				Descr	iption			Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Logona	(Thickness)		Discontinuity Detail Main						
(102mm)				-24.43		- - - - - - 29.10					MUDST weather remains	ONE partiall ed with num (2-40mm in Mudstone F	ed dark grey y to distinctly erous fossilised size). formation).	
											Comple	te at 29.10m	BGL.	

Drilling	Drilling Progress and Water Observations				ard Pene	tration Test		Flush		Ge	neral	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To Type Returns (%)			Remarks		
28/06/2021	29.10	29.10	0.00						Inspection pit dug prior to	with Methanol preservative. No. 50mm diameter led between 1.20-2.70m (5) UXO carried out as s. (6) Aquifer protection 9.90m BGL prior to		
All dimensions in metres Scale 1:25.00 For explanation of abbreviations se					Che	cked by: K,W,	Logged by: M.B/R.C	Contract No. 4339				

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Yo ::457301.314 N:525582.69		MS\BH03			
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 6 of 14			

# Figure MS\BH03.1 MS\BH03 0.10-1.20m BGL



# Figure MS\BH03.2 MS\BH03 1.20-2.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ect: Preliminary Onshore Ground Investigation for NZT							
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699							
Method (Equipment): Sonic/Rotary Cori	ng (Boart Longyear LS250/Boart Longyea		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 7 of 14			

# Figure MS\BH03.3 MS\BH03 2.70-4.20m BGL



# Figure MS\BH03.4 MS\BH03 4.20-5.70m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North \ E:457301.314 N:525582.		MS\BH03			
Method (Equipmen Sonic/Rotary	t): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 8 of 14			

# Figure MS\BH03.5 MS\BH03 5.70-7.20m BGL



# Figure MS\BH03.6 MS\BH03 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT						
Client:	Client:  AECOM  AECOM  Location:  North-west of Redcar, North Yorkshire  E:457301.314 N:525582.699						
Method (Equipment): Sonic/Rotary Co	ring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 9 of 14		

# Figure MS\BH03.7 MS\BH03 8.70-10.20m BGL



# Figure MS\BH03.8 MS\BH03 10.20-11.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground In	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457301.314 N:525582.69	MS\BH03	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 10 of 14

### Figure MS\BH03.9 MS\BH03 12.70-14.50m BGL



# Figure MS\BH03.10 MS\BH03 14.50-16.00m BGL

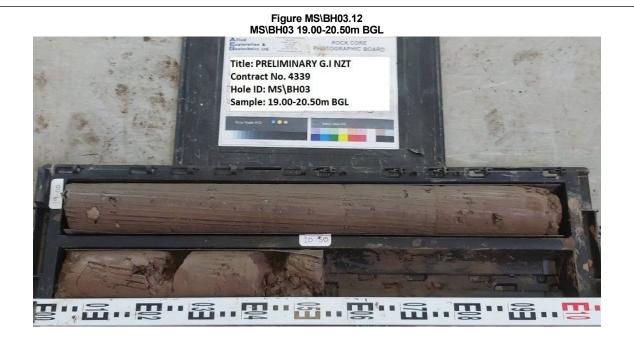


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### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457301.314 N:525582.69		MS\BH03
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 11 of 14





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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: AECOM MS\BH03 E:457301.314 N:525582.699 Start Date: 22/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) Ground Level (m): 4.672 12 of 14



### Figure MS\BH03.14 MS\BH03 22.00-23.50m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Exploratory Hole No.			
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699			MS\BH03
Method (Equipment): Sonic/Rotary C	oring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 13 of 14

# Figure MS\BH03.15 MS\BH03 23.50-25.00m BGL



# Figure MS\BH03.16 MS\BH03 25.00-26.50m BGL

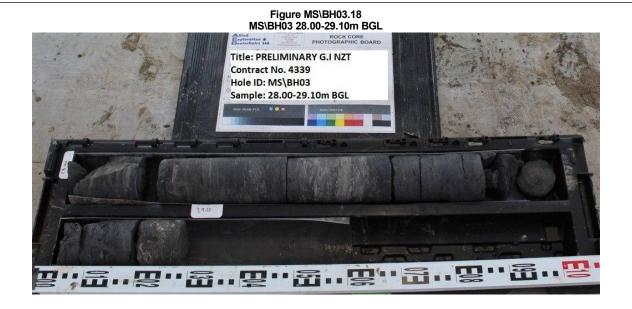


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### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground I	Exploratory Hole No.			
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699			MS\BH03
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 14 of 14





#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.									
Client: AECOM		-west of Redcar, North Yor E:457410.778 N:525626.53	MS\BH04								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 1 of 2								

SAMP	SAMPLES & TESTS				1		STRATA	lent/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.30 0.30 0.43-1.20 0.43 0.43-0.90	ES1 PID SL1 <sub>(SS)</sub> J4 <sub>(SL1)</sub>	<0.1ppm		4.11		(0.90)	MADE GROUND (Dark grey slightly sandy gravel and cobbles with medium boulder content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are subangular to subrounded and include slag. Boulders are >400mm diameter subangular and include slag. Slag is vesicular (100%)).	0 SSSSSSSSSSSSSS 0 0 0 0 0 0 0 0 0 0 0
0.50 0.50 0.90 1.00	B5 <sub>(SL1)</sub> ES2 PID U6 <sub>(SL1)</sub> ES3	<0.1ppm			XO	-  -  -  -  -	Loose becoming medium dense to dense yellow brown slightly silty gravelly SAND with occasional shell fragments. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. Sand is fine to medium.	
1.00 1.20-2.70 1.20 1.20-1.95	PID SL2 <sub>(SS)</sub> J7 <sub>(SL2)</sub>	<0.1ppm			× · · · · · · · · · · · · · · · · · · ·	. <del>.</del> 	(Tidal Flat Deposits).	
1.20 1.95 1.95-2.70	B8 <sub>(SL2)</sub> S J9 <sub>(SL2)</sub> B10 <sub>(SL2)</sub> PID	N8			× · · · · · · · · · · · · · · · · · · ·	:_ :- :- :-		
2.70-4.20	PID SL3 <sub>(SS)</sub>	<0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- -	at c.2.70m BGL medium dense gravelly sand.	
2.70 2.70 2.70-3.45 2.70 3.00	J11 <sub>(SL3)</sub> B12 <sub>(SL3)</sub> S PID	N29 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·		at c.2.7011 BGL Medium dense gravelly sand.	
3.45 3.45-4.20	J13 <sub>(SL3)</sub> B14 <sub>(SL3)</sub>				×0	- - - - -		
4.00	PID	<0.1ppm			×	F		
4.20-5.70 4.20 4.20-4.95 4.20	SL4 <sub>(SS)</sub> J15 <sub>(SL4)</sub> B16 <sub>(SL4)</sub> S	N44			x	    	at c.4.20m BGL dense.	
4.95 4.95-5.70 5.00	J17 <sub>(SL4)</sub> B18 <sub>(SL4)</sub> PID	<0.1ppm			\( \) \( \)	- - - - -	at c.4.95m BGL sand.	000
5.70-7.20 5.70 5.70-6.45 5.70 6.00	SL5 <sub>(SS)</sub> J19 <sub>(SL5)</sub> B20 <sub>(SL5)</sub> S PID	N41 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - - - - - - -	at c.5.70m BGL dense.	
6.45 6.45-7.20	J21 <sub>(SL5)</sub> B22 <sub>(SL5)</sub>				x	  (11.80) 		
7.00	PID	<0.1ppm			×	F		
7.20-8.70 7.20 7.20-7.95 7.20	SL6 <sub>(SS)</sub> J23 <sub>(SL6)</sub> B24 <sub>(SL6)</sub> S	50/250mm			XO	   	at c.7.20m BGL very dense.	
				1	Χ	<u> </u>		

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Borir	ng Progres	s and Wat	er Observa	ations	L	iner Sample	e Informatio	General				
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks			
17/06/2021	0.00	0.00	178		0.43 - 1.20	178	100	Yes	(1) Description derived from drillers daily report.			
17/06/2021	2.70	2.70	178	Dry	1.20 - 2.70	178	100	Yes	(2) Inspection pit dug prior to drilling.			
18/06/2021	2.70	2.70	178	Dry	2.70 - 4.20	178	100	Yes	(3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 2.00-5.00m and			
					4.20 - 5.70	178	100	Yes	15.00-18.00m BGL.			
					5.70 - 7.20	178	100	Yes	(4) UXO carried out as per the Client instructions.			
					7.20 - 8.70	178	100	Yes	(5) Aquifer protection installed between 13.75-11.70 BGL prior to commencing rotary drilling.			

For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: G.T/R.C Contract No. All dimensions in metres Scale 1:50.00 4339

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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Status:-

Project:	Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536				MS\BH04					
Method (Equipme Sonic/Rota	nt): ry Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet:	2 of 2					

SAMP	LES & T	ESTS			STRATA			l aut/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
7.95 7.95-8.70 8.00	J25 <sub>(SL6)</sub> B26 <sub>(SL6)</sub> PID	<0.1ppm			xo	- - - - -	Loose becoming medium dense to dense yellow brown slightly silty gravelly SAND with occasional shell fragments. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. Sand is fine to medium. (Tidal Flat Deposits). (continued)	
8.70-10.20 8.70 8.70-9.45 8.70 9.00	SL7 <sub>(SS)</sub> J27 <sub>(SL7)</sub> B28 <sub>(SL7)</sub> S PID	N51 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - - - - - -	at c.8.70m BGL very dense.	
9.45 9.45-10.20	J29 <sub>(SL7)</sub> B30 <sub>(SL7)</sub>				× · · · · · · · · · · · · · · · · · · ·	- - - -		
10.00	PID	<0.1ppm				-		
10.20	S	N25			× · · · · · · · · · · · · · · · · · · ·	- - - - - - -	at c.10.20m BGL medium dense.	
11.00	PID	<0.1ppm			x	- - - - - -		
11.70-13.20 11.70 11.70-12.70 11.70 12.00	SL8 <sub>(SS)</sub> J35 <sub>(SL8)</sub> B36 <sub>(SL8)</sub> S PID	N3 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	-	at c.11.70m BGL slightly sandy clay.	
12.70	J37 <sub>(SL8)</sub>			-7.69	x x	12.70	Soft to firm dark brown slightly sandy CLAY/SILT. Sand is fine to	
12.70-13.20 13.00 13.20-13.65	B38 <sub>(SL8)</sub> PID UT8	<0.1ppm (25)			X X X X X X X X X X X X X X X X X X X	(1.05)	coarse. (Driller notes sandy bands). (Tidal Flat Deposits). at c.13.20m BGL silt of low plasticity.	
				-8.75	<u> </u>	- 13.75 -	Boring complete at 13.75m BGL - continued by rotary drilling.	XXXXX 18

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
18/06/2021 21/06/2021 21/06/2021	10.20 10.20 13.75	10.20 10.20 13.75	178 178 178	4.90 4.10 3.50	8.70 - 10.20 11.70 - 13.20 13.20 - 13.65	178 178 178	100 100 100	Yes Yes No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 2.00-5.00m and 15.00-18.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 13.75-11.70m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Preliminary Onshore Ground Investigation for NZT										
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536				MS\BH04						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet:	1 of 14							

RUN DETAILS STRATA									ant/
Depth &	TCR (SCR)	Fracture Index	Water	Reduced	Legend	Depth	Descr	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD		Wa	Level	Legend	(Thickness)	Discontinuity Detail	Main	
13.75 (105mm)	0	SOIL		-8.75		- 13.75 - (0.75)	13.75m J1 13.75-25.00m soil.	(1) Laminated brown CLAY with gravelly clay bands. (Tidal Flat Deposits).	
14.50	100			-9.49		14.50	14.50m J39	Firm thinly laminated red brown	10 2 0
15.30 (105mm)				-10.29	- 0 -	(0.80) - - - - - - 15.30	14.50m B40	slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes limestone, mudstone and sandstone. (Glacial Deposits). 14.85m clay is of high plasticity.	
(102mm)	100					-	15.30m J42 15.30m B43	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes limestone, mudstone and sandstone. (Glacial Till).  15.30m clay is of intermediate plasticity.	
16.80						- - - - - - -	16.30m U44	16.30m very high strength. Clay is of intermediate plasticity.	
	100					<u> </u>	16.80m B46		000
17.50 (шш201)	100					(3.50)			

Drilling	Standa	ard Pene	tration Test		Flush		General Remarks				
Date	Depth	Casing	Water Standing	Depth	Туре	Result From - To Type Returns (%)					
21/06/2021	13.75	13.75	2.11	14.50	14.50 - 15.30 15.30 - 16.80 16.80 - 17.50			Water Water Water Water Water	100 100 100 100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install and 15.00-18.00m BGL.	No. 50mm diameter led between 2.00-5.00m er the Client instructions. stalled between
All dimensions in metres Scale 1:25.00 For explanation of symatom abbreviations see Key								\ \	ked by:	Logged by: G.T/R.C	Contract No. 4339

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RC

Tel: 0191 387 4700 Fax: 0191 387 4710

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### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Onshore Ground	oject: Preliminary Onshore Ground Investigation for NZT									
Client: AECOM		-west of Redcar, North Yor E:457410.778 N:525626.53		ı	MS\BH04					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	nod (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)  Ground Level (m): 5.006  Start Date: 17/05/2021									

RUN	DETA	ILS					STRATA		Instrument/ Backfill	
Depth &	TCR (SCR)	Fracture Index	Water	Reduced	Legend	Depth	Description			
(Core Ø)	(SCR) RQD	Frac	Wa	Level	Legend	(Thickness)	Discontinuity Detail	Main		
17.80 (mm201)	100			40-70		-	17.80m J47 17.80m U48	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes limestone, mudstone and sandstone. (Glacial Till). (continued) 17.80m clay is of intermediate plasticity.		
(102mm)	100			-13.79		18.80 - - - - -	18.80m J49 18.80m B51 18.80m ES50	Stiff thickly laminated red brown slightly sandy CLAY. Sand is fine to coarse. (Glacial Deposits).		
19.80 (105mm) (105.05)	86					-	19.80m ES(M)52			
(102mm)	77					(3.50) - - - - - - -	20.50m J53 20.50m B54	20.50m clay is of intermediate plasticity.		
21.50	98					- -	21.50m J55 21.50m B56			

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General	
Date	Depth	Casing	Wa Stand	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks
21/06/2021 22/06/2021	20.50 20.50	20.50 20.50	0.0 4.0	 17.80 20.50	00	N17 N15	17.80 - 18.80 18.80 - 19.80 19.80 - 20.50 20.50 - 21.50 21.50 - 22.30	Water Water Water Water Water	100 100 100 100 100	(1) Description derived f (2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes instal and 15.00-18.00m BGL. (4) UXO carried out as p (5) Aquifer protection in 13.75-11.70m BGL prior drilling.	or to drilling. No. 50mm diameter led between 2.00-5.00m ler the Client instructions. stalled between
All dimensions in metres For explanation of symbols and		mbols and	Cheg	ked by:	Logged by:	Contract No.					

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: Contract No. 4339

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

Tel: 0191 387 4700 Fax: 0191 387 4710

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### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project:	Explo	ratory Hole No.				
Client:	AECOM		-west of Redcar, North Yor E:457410.778 N:525626.53		١	MS\BH04
Method (Equipment): Sonic/Rotary Cor	ring (Boart Longyear LS250/Comacchio G	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet:	3 of 14	

RUN	DETA	NLS					STRATA		Instrument/ Backfill	
Depth &	TCR (SCR)	Fracture Index	Water	Reduced	Legend	Depth	nec)			
(Core Ø)	(SCR) RQD	Frac	Wa	Level	Legena	(Thickness)	Discontinuity Detail	Main	Ins E	
(102mm)				-17.29		- - - - - 22.30		Stiff thickly laminated red brown slightly sandy CLAY. Sand is fine to coarse. (Glacial Deposits). (continued)		
(102mm)	100					- - - - - - - - - - - - - - - - - - -	22.30m J57 22.30m E558 22.30m E558	Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes sandstone, mudstone and limestone. (Glacial Till).		
23.80	100 (11) 0					(2.70) - - - - - -	23.80m J61 23.80m B62	23.80m clay is of low to intermediate plasticity.		
(102mm)				-19.99		- - - - - - - 25.00	24.80m ES63 24.80m ES(M)64			
25.30	100 (100) 0	NI 8				-	25.00-25.30m non-intact.  25.30-26.80m subhorizontal (5-25 degrees) and oblique (55-65 degrees) closely spaced planar to undulating smooth to rough open and tight clean discontinuities.	Weak thinly bedded dark grey MUDSTONE partially weathered, in places, distinctly weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation).		

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
				23.80	S	50/11mm	22.30 - 23.80 23.80 - 25.30 25.30 - 26.80	Water Water Water	100 100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install and 15.00-18.00m BGL.	No. 50mm diameter led between 2.00-5.00m er the Client instructions. stalled between	
	nensions in metres Scale 1:25.00  For explanation of sy abbreviations see K				Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339				

Status:-

**FINAL** 

♠	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 387 4700 Fax: 0191 387 4700 Fax: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Project:	Preliminary Onshore Ground	I Investigation	for NZT		Exploratory Ho	le No.
Client:	AECOM		-west of Redcar, North Yor E:457410.778 N:525626.53		MS\BH04	ļ
Method (Equipment Sonic/Rotal	nt): ry Coring (Boart Longyear LS250/Comacchio (	GEO 205)	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 4 of 14	
DUNDETA	11.0		CTDATA			1

PLIN	I DETA	AII S					STRATA		
Depth			_					ription	Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		Main	Instru Bac
(102mm)		ш.				- -	Sectionally States	Weak thinly bedded dark gre MUDSTONE partially weather places, distinctly weathered v occasional fossilised remains (2-40mm in size).	y ered, in with
26.80	100	9				- - - -	26.80-28.30m subhorizontal (5-25 degrees) and	(Redcar Mudstone Formation (continued)	1).
(102 mm)	100 (27) 0	9				- - - - - - (5.00) -	26.80-28.30m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely spaced planar to undulating smooth open and tight clean and infilled (clay) discontinuities.		
28.30	100	8				- - - -	28.30-30.00m subhorizontal (5-25 degrees) closely		
(102mm)	100 (90) 24					-	spaced smooth planar to undulating smooth open and tight clean and infilled (clay) discontinuities.		

Drillin	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To Type Returns (%)			s Remarks		
							26.80 - 28.30 28.30 - 29.80	Water Water	100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install and 15.00-18.00m BGL.	No. 50mm diameter led between 2.00-5.00m er the Client instructions. stalled between	
	All dimensions in metres Scale 1:25.00  For explanation of sy abbreviations see K					Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339			

<u> </u>	Regional Office:	Unit 20 Business Development Centre, E	Eanam Wharf, Blackbu	urn, BB1 5BL <b>Tel:</b> 01773	? 735 300 <b>Fax</b> : 01772 73	35 999
		DRIL	LHOLE F	RECORD		Status:- FINAL
Project:	Prel	iminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client:	AECOM			-west of Redcar, North Y -:457410.778 N:525626.		MS\BH04
Method (Equipment): Sonic/Rotary Coring	(Boart Long	year LS250/Comacchio G		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 5 of 14

RUN	DETA	AILS					nt/		
Depth	TCR	ex ex	je	Reduced		Depth	Descri	iption	rume
Depth & (Core Ø)	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	Instrument/
20.00						-			//////
102mm)	100 (100) 0					-			
= 5				-24.99		30.00		Complete at 30.00m BGL.	
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Drilling	Drilling Progress and Water Observations				ard Pene	tration Test	Flush			General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	narks
22/06/2021	30.00	30.00	0.00							(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install and 15.00-18.00m BGL.	No. 50mm diameter led between 2.00-5.00m er the Client instructions. stalled between
All dimensions in metres Scale 1:25.00					For explanation of symbols and abbreviations see Key Sheets				ked by:	Logged by: G.T/R.C	Contract No. 4339

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT											
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536											
Method (Equipment): Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 6 of 14								

## Figure MS\BH04.1 MS\BH04 0.43-1.20m BGL



## Figure MS\BH04.2 MS\BH04 1.20-2.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT											
Client:	ient:  AECOM  AECOM  North-west of Redcar, North Yorkshire  E:457410,778 N:525626,536											
Method (Equipment): Sonic/Rotary C	Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 7 of 14							

## Figure MS\BH04.3 MS\BH04 2.70-4.20m BGL



## Figure MS\BH04.4 MS\BH04 4.20-5.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I		Exploratory Hole No.									
Client: AECOM		-west of Redcar, North Yor ::457410.778 N:525626.53		MS\BH04							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 8 of 14							

## Figure MS\BH04.5 MS\BH04 5.70-7.20m BGL



## Figure MS\BH04.6 MS\BH04 7.20-8.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North ` ::457410.778 N:525626		MS\BH04						
Method (Equipment Sonic/Rotary	t): / Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 9 of 14						

## Figure MS\BH04.7 MS\BH04 8.70-10.20m BGL



## Figure MS\BH04.8 MS\BH04 11.70-13.20m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT **Exploratory Hole No.** North-west of Redcar, North Yorkshire Client: AECOM MS\BH04 E:457410.778 N:525626.536 Start Date: 17/05/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 5.006 10 of 14

### Figure MS\BH04.9 MS\BH04 13.75-16.30m BGL



## Figure MS\BH04.10 MS\BH04 16.30-17.50m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT **Exploratory Hole No.** North-west of Redcar, North Yorkshire Client: AECOM MS\BH04 E:457410.778 N:525626.536 Start Date: 17/05/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 5.006 11 of 14

## Figure MS\BH04.11 MS\BH04 17.50-18.80m BGL



## Figure MS\BH04.12 MS\BH04 18.80-20.50m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457410.778 N:525626.53		MS\BH04
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 12 of 14

# Figure MS\BH04.13 MS\BH04 20.50-22.30m BGL Allied ROCK CORE Exploration & PHOTOGRAPHIC BOAR Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH04 Sample: 20.50-22.30m BGL "B.g"B.g"B.g"B.g"B.

## Figure MS\BH04.14 MS\BH04 22.30-23.80m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH04 **AECOM** E:457410.778 N:525626.536 Start Date: 17/05/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 5.006 13 of 14



#### Figure MS\BH04.16 MS\BH04 25.30-26.80m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT										
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536										
Method (Equipment): Sonic/Rotary	Coring (Boart Longyear LS250/Comacchio G	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 14 of 14							

## Figure MS\BH04.17 MS\BH04 26.80-28.30m BGL



## Figure MS\BH04.18 MS\BH04 28.30-30.00m BGL



### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Expl	oratory Hole No.			
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456866.530 N:525583.502					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	ar DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet:	1 of 2	

SAMPI		STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.12-0.60 0.12-1.20 0.12	ES1 SL1 PID	0.1ppm		7.38		0.10	MADE GROUND (Macadam).  MADE GROUND (Strong white grey concrete. Recovered as gravel, cobbles and boulders).	D Q DO
0.60-1.20 0.60	ES2 PID	<0.1ppm						
1.20-2.70	SL2 S	50/0mm				(2.70)		
2.70-4.20	SL3 <sub>(SS)</sub>			4.68		2.80	at c.2.70m BGL very dense/possible obstruction.	
2.70 2.70-4.20 2.70	J5 <sub>(SL3)</sub> B6 <sub>(SL3)</sub> S	50/0mm				(1.60)	MADE GROUND (Black grey gravel and cobbles. Gravel is fine to coarse angular and includes slag, slag, brick and ash. Cobbles are angular and include slag. Slag is vesicular (50-75%)).	
4.10 4.10 4.20-5.70	ES3 PID SL4 <sub>(SS)</sub>	<0.1ppm		3.08		4.40	Multiple days are sittle OANID Out the first to see the	
4.20 4.20-4.80 4.20 4.40 4.40 4.80 4.80-5.70	J7 <sub>(SL4)</sub> B8 <sub>(SL4)</sub> S ES4 PID J9 <sub>(SL4)</sub> B10 <sub>(SL4)</sub>	N24 <0.1ppm			×		Medium dense grey silty SAND. Sand is fine to medium. (Tidal Flat Deposits).  at c.4.80m BGL brown.	
5.70-7.20 5.70 5.70-6.45 5.70	SL5 <sub>(SS)</sub> J11 <sub>(SL5)</sub> B12 <sub>(SL5)</sub> S	<b>N</b> 19			×	 (2.80)    	at c.5.70m BGL brown grey sand with occasional pockets of organic clay.	0 }
6.45 6.45-7.20	J13 <sub>(SL5)</sub> B14 <sub>(SL5)</sub>				×			
				0.28	× .	7.20	at c.7.00m BGL brown.	
7.20-8.70 7.20 7.20-7.95 7.20 7.30	SL6 <sub>(SS)</sub> J15 <sub>(SL6)</sub> B16 <sub>(SL6)</sub> S PID	50/250mm <0.1ppm			×0		Dense to very dense yellow brown slightly silty slightly gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone, limestone and coal. (Tidal Flat Deposits).	

				Ç		(Tidai Fiai	Bopoonto).			
Borin	g Progres	s and Wat	er Observa	ations	L	iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
16/06/2021	0.00	0.00	178		0.12 - 1.20	178	100	No	(1) Description derived from drillers daily report.	
					1.20 - 2.70	178	100	No	(2) Inspection pit dug prior to drilling.	
					2.70 - 4.20	178	60	Yes	(3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-12.50m and	
					4.20 - 5.70	178	100	Yes	23.50-29.90m BGL.	
					5.70 - 7.20	178	100	Yes	(4) UXO carried out as per the Client instructions.	
					7.20 - 8.70	178	100	Yes	(5) Aquifer protection installed between 14.70-12.50m BGL prior to commencing rotary drilling.	
		I	1	1	1	I	I	1	H	

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	G.T/R.C	4339

# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 01772 735 300 Fax: 01772 735 999

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Grou	und Investigation	for NZT		Exploratory Hole No.
Client: AECOM		-west of Redcar, North Yo E:456866.530 N:525583.5		MS\BH05
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Long	gyear DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 2 of 2

SAMP	LES & TE	ESTS		STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.95 7.95-8.70 8.30 8.70-10.20 8.70	J17 <sub>(SL6)</sub> B18 <sub>(SL6)</sub> PID SL7 <sub>(SS)</sub> J19 <sub>(SL7)</sub>	<0.1ppm			×0	- - - - - -	7.95m slightly silty sand. Dense to very dense yellow brown slightly silty slightly gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone, limestone and coal. (Tidal Flat Deposits). (continued)		
8.70-9.45 8.70 9.30	B20 <sub>(SL7)</sub> S	N48 <0.1ppm			×0	-  -  -  -			
9.45 9.45-10.20	J21 <sub>(SL7)</sub> B22 <sub>(SL7)</sub>	<b>-</b> 0. гррпп			×	(4.50) [- - - - - -			
10.20-11.70 10.20 10.20-10.95 10.20 10.30	SL8 <sub>(SS)</sub> J23 <sub>(SL8)</sub> B24 <sub>(SL8)</sub> S PID	N49 <0.1ppm			x	-			
10.95 10.95-11.70	J25 <sub>(SL8)</sub> B26 <sub>(SL8)</sub>					-			
11.30	PID	<0.1ppm			× · . · . ·	<u>-</u>			
11.70-13.20 11.70 11.70-12.45 11.70 12.30 12.45 12.45-13.20	SL9 <sub>(SS)</sub> J27 <sub>(SL9)</sub> B28 <sub>(SL9)</sub> S PID J29 <sub>(SL9)</sub> B30 <sub>(SL9)</sub>	50/157mm <0.1ppm		-4.22	XO	11.70	Dense to very dense dark grey brown slightly silty very gravelly SAND with frequent fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes coal. limestone, sandstone and mudstone. (Tidal Flat Deposits).		
13.20-14.70 13.20 13.20-13.95 13.20 13.30	SL10 <sub>(SS)</sub> J31 <sub>(SL10)</sub> B32 <sub>(SL10)</sub> S PID	N32 <0.1ppm		-6.47	× · · · · · · · · · · · · · · · · · · ·			0000	
13.95 13.95-14.70 14.30	J33 <sub>(SL10)</sub> B34 <sub>(SL10)</sub> PID	<0.1ppm		-7.22		(0.75)	Firm dark grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes sandstone, mudstone and limestone. (Tidal Flat/Glacial Deposits).		
				-1.22		14./U	13.95m clay is of high plasticity.  Boring complete at 14.70m BGL - continued by rotary drilling.		

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
16/06/2021 17/06/2021 17/06/2021	11.70 11.70 14.70	11.70 11.70 14.70	178 178 178 178	8.40 4.20	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70	178 178 178 178	100 100 100 100	Yes Yes Yes No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installaltion: 2 No. 50mm diameter slotted standpipes installed between 6.50-12.50m and 23.50-29.90m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.70-12.50m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

Tel: 0191 387 4700 Fax: 0191 387 4710

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### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Ons	hore Ground Investigation	n for NZT		Exploratory Hole No.
Client: AECOM		n-west of Redcar, North Yo E:456866.530 N:525583.5		MS\BH05
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/E	Boart Longyear DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 1 of 15

RUN	I DETA	AILS					STRATA						
Depth &	TCR (SCR) RQD	ture	ter	Reduced		Depth		ription	Instrument/ Backfill				
(Core Ø)	RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst B				
15.00		RO		-7.22 -7.52		14.70 (0.30) - 15.00	14.70-15.00m rotary openhole drilling.	(1) Brown gravelly CLAY. (Driller describes as 'stiff'). (Glacial Deposits).					
(15.80)	38	SOIL		7.02		10.00	15.00-20.30m soil. 15.00m J35 15.00m B36	Stiff grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone and limestone. (Glacial Till).  15.00m clay is of intermediate plasticity.					
	70					<del>-</del> -	15.80m J1						
(102mm)						-	16.00-16.40m U1	16.00m high strength. Clay is of intermediate plasticity.					
16.30	0					- - -							
(102mm)						(3.30)							
16.80	100					[	16.80m J2						
(102mm)					<u></u>	-							
17.30	70					] - -	17.30m ES37						
(102mm)						<u>-</u> -							
17.80	80					-	17.80m J38						
(102mm)						  -  -  -	18.00-18.30m U2						
18.30	0			-10.82	<u> </u>	18.30	18.30m J3	18.30m clay is of high plasticity.					
(102mm)						-							

Drilling	Drilling Progress and Water Observations					rd Penet	ration Test		Flush		Ge	neral			
Date	Depth	Casing	Wate Standi		Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks				
18/06/2021	14.70	14.70	4.71	1	15.80	s	N21	14.70 - 15.00	Water	100	(1) Description derived for	rom drillers daily report.			
18/06/2021	15.00	15.00	4.71	1	16.80	s	N17	15.00 - 15.80	Water	50	(2) Inspection pit dug pri				
21/06/2021	15.00	15.00	0.00	o	18.30	s	N17	15.80 - 16.30	Water	50	(3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-12.50				
								16.30 - 16.80	Water	50	and 23.50-29.90m BGL.				
								16.80 - 17.30	Water	60		er the Client instructions.			
								17.30 - 17.80	Water	60	(5) Aquifer protection ins 14.70-12.50m BGL prior				
								17.80 - 18.30	Water	50	drilling.	to commonomy rotally			
								18.30 - 18.80	Water	50					
All dimensions in metres					For explanation of symbols and				Chec	ked by:	Logged by:	Contract No.			

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: Contract No. 4339

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole N	0.
Client: AECOM		-west of Redcar, North Yor E:456866.530 N:525583.50		MS\BH05	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 2 of 15	

RUN	I DETA	AILS					STRATA		Jt.
Depth	TCR	3X and	ē	Reduced		Depth	Desc	ription	Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst B.
18.80 (102mm)	0				-	-		Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone, mudstone and limestone. (Glacial Till). (continued)	
(102mm)	100					[ _ (2.30)	19.30m J39 19.30m B40	19.30-19.80m driller notes loss of flush to 50% returns.	
19.80 (102mm)	100					- - - - - - - -	19.80m J41 19.80m B42	19.80m laminated with silt dustings on the laminae. Clay is of intermediate plasticity. 19.80-20.30m driller notes loss of flush to 70% returns.	
20.30	83 (0) 0	NI		-13.12		20.60	20.60-23.50m non-intact.	Extremely weak thinly laminated grey	
(102mm)								MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Formation).	
21.50 (wm 201) 22.00	100 (0) 0					-			
(102mm)	100 (0) 0					(2.90)			

Drillin	Drilling Progress and Water Observations					tration Test		Flush		General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks		
				19.30 21.50	S C	N13 50/159mm	18.80 - 19.30 19.30 - 19.80 19.80 - 20.30 20.30 - 21.50 21.50 - 22.00 22.00 - 23.00	Water Water Water Water Water Water	50 50 70 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-12.50 and 23.50-29.90m BGL. (4) UXO carried out as per the Client instruction (5) Aquifer protection installed between 14.70-12.50m BGL prior to commencing rotary drilling.			
	All dimensions in metres			For explanation of symbols and				\ \	ked by:	Logged by: G.T/R.C	Contract No. 4339		

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

Tel: 0191 387 4700 Fax: 0191 387 4710

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### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Exploratory Hole No.								
Client:	lient:  AECOM  Location:  North-west of Redcar, North Yorkshire  E:456866.530 N:525583.502								
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 3 of 15				

RUN DETAILS								OTD ATA					닉
								STRATA				Instrument/ Backfill	
Depth &	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		Descri	iption			Bacl	
(Core Ø)	RQD	분=	>	LOVOI		(11110111000)	Discontinuity D	Detail		Main		Ļ.,	_
23.00	100					- -			Extremely we MUDSTONE destructured (Redcar Muc (continued)	distinctly v		00	0 0 0
(102mm)	(0)			-16.02		- - - - 23.50			(commueu)			000	07070
23.30	100 (0) 0	NI		-10.02			23.50-26.00m non-intact.		Extremely we grey MUDST to destructur (Redcar Mud	ONE distin			0
(102mm)												000000000000000000000000000000000000000	10,000000
25.00	100 (0) 0					(2.50) - - - - -						000000000000000000000000000000000000000	10,00000
(102mm)				-18.52		- - - - - 26.00						000000000000000000000000000000000000000	0
(a mezot) 26.50	100 (0) 0	NI		-10.52			26.00-26.60m non-intact.		Extremely we laminated M weathered to (Redcar Muc	UDSTONÉ o distinctly v	partially veathered.	000000000000000000000000000000000000000	0
	100 (0) 0	15				-	26.60-27.60m horizontal to su	bhorizontal (0-5				000	0

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
21/06/2021 22/06/2021	26.00 26.00	26.00 26.00	0.00 4.27				23.00 - 23.50 23.50 - 25.00 25.00 - 26.00 26.00 - 26.50 26.50 - 28.00	Water Water Water Water Water	100 100 100 100 100	(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes instal and 23.50-29.90m BGL.	No. 50mm diameter led between 6.50-12.50m er the Client instructions. stalled between	
All dimensions in metres For explanation abbreviations					Chec	ked by: .W.	Logged by: G.T/R.C	Contract No. 4339				

, Chester-le-Street, Co. Durham, DH2 2RG I Wharf, Blackburn, BB1 5BL **Tel**: 0191 387 4700 **Fax**: 0191 387 4710 **Tel**: 01772 735 300 **Fax**: 01772 735 999

	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Unit 20 Business Development Centre, Eanam
Ğ		DRILLH

G	FINA	<b>AL</b>							
Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory	Hole No.			
Client:	Client:  AECOM  AECOM  Location: North-west of Redcar, North Yorkshire E:456866.530 N:525583.502								
Method (Equipm Sonic/Rota	ent): ry Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 4 of 1	15			

RUN	DETA							STRATA				ent/
Depth	TCR	ture	ter	Reduced		Depth		Descri	iption			Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity [	Detail		Mair	1	Inst
							degrees) closely to very closely	spaced planar to		Extremely weak to very weak thinly		
						-	undulating smooth and rough or to coarse gravel) discontinuities.	ben to wide intilled (tine	laminated N	MUDSTO	NE partially	0000
						-	,				ly weathered.	000
						_			(Redcar Mu		ormation).	100
						_			(continued)			000
(E												000
(102mm)												000
(10						-						000
						_						16 4 H
						-						
		10	-			-	07.00.00.00					16 4 H
		10				_	27.60-28.00m horizontal to su degrees) closely spaced planar	ibnorizontal (0-25 to undulating smooth				
							open and tight infilled (clay) disc	ontinuities.				°
												0 0
28.00						(3.90)						\^ \A 4
20.00	100	NI	1			<u> </u>	28.00-28.70m non-intact.					
	(27)					-	20.00 20.7 011 11011 111001					0000
	0					_						
												1°0\d
												0 0
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mr (mr		19	-			_	00 70 00 50					0 40
(102mm)		19				_	28.70-29.50m subhorizontal (	5-25 degrees) very				000
1							closely spaced planar to undulat tight smooth infilled (clay) discon	ntinuities.				1°0 = 0
						_						10071
						_						1°0 =0
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												000
29.50												
	100	NI	]				29.50-29.90m non-intact.				inctly weathered	000
	(0)								to destructu		•	100
						-						0000
						}						
		<b></b>	4	-22.42		29.90		_				
		NI				L	29.90-30.50m non-intact.		Extremely v	weak to w	eak thinly	000
									iaminated l	ignt grey l	MUDSTONE to destructured.	0000
						_			(Redcar Mu			000
(102mm)						-			(I Veucai IVII	ausionie F	omanon).	0000
[102						-						000
						(1.00)						0000
			1			_						
		22					30.50-30.90m subhorizontal (closely spaced planar to undulate	5-25 degrees) very				lo ~ o 1
							tight infilled (clay) discontinuities					000

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To Type Returns (%)			Remarks		
							28.00 - 29.50 29.50 - 31.00	Water 100 Water 100		(2) Inspection pit dug pri (3) Double installation: 2	No. 50mm diameter ed between 6.50-12.50m er the Client instructions. talled between	
All dimensions in metres Scale 1:25.00						mbols and by Sheets	Check K	ked by: W.	Logged by: G.T/R.C	Contract No. <b>4339</b>		

A		•		ead Office: egional Offic				on Fell, Chester-le-Str Eanam Wharf, Blackb	reet, Co. Durham, DH2 2RG burn, BB1 5BL		7 4700 <b>Fax:</b> 0191 38 35 300 <b>Fax:</b> 01772 7		
							DRIL	LHOLE	RECORD			Status:- FINAL	
Project:				P	relimina	ry Onsho	ore Ground	Investigation	for NZT			Exploratory Ho	le No.
Client:			MS\BH05	1									
Method ( Sonid			ng (B	oart Lor	ngyear L	S250/Boa	art Longyea	ar DB520)	Ground Level (m): 7.484		Start Date: 16/06/2021	Sheet: 5 of 15	
RUN	I DETA	AILS							STRATA				int/
Depth	TCR (SCR)	Fracture	Water	Reduced		Depth			Desc	cription			Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Legend	(Thickness)		Discontinuity	Detail		Ma	in	l su
		NI		-23.42 -23.52		30.90	30.90-31.00m	ı non-intact.		laminat	ely weak to v ed light grey	MUDSTÓNE	000
						- - -				\ partially \(Redca	to distinctly Mudstone International Mudstone International Market Processing (1997)	weathered. Formation).	

Dri	lling Pro	gress and	d Water Ob	bservations		Standa	ard Pene	tration Test		Flush				
Date		Depth	Casing		ater nding	Depth	Туре	Result	From - To	Туре	Returns (%)			
22/06/202	21	31.00	31.00	0 0	.00							(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-12.50 and 23.50-29.90m BGL. (4) UXO carried out as per the Client instruction (5) Aquifer protection installed between 14.70-12.50m BGL prior to commencing rotary drilling.		
All		nsions i ale 1:25	n metre 5.00	es				tion of syr ns see Ke	nbols and y Sheets	1	ked by:	Logged by: G.T/R.C	Contract No. 4339	

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT									
Client:	ient: AECOM Location: North-west of Redcar, North Yorkshire E:456866.530 N:525583.502									
Method (Equipment Sonic/Rotary	t): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 6 of 15					

## Figure MS\BH05.1 MS\BH05 0.12-1.20m BGL



## Figure MS\BH05.2 MS\BH05 1.20-2.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.								
Client: AECOM									
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longye		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 7 of 15					

## Figure MS\BH05.3 MS\BH05 2.70-4.20m BGL



## Figure MS\BH05.4 MS\BH05 4.20-5.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

	I										
Project:	roject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North Yo ::456866.530 N:525583.5	MS\BH05							
Method (Equipment Sonic/Rotary	e): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 8 of 15						



## Figure MS\BH05.6 MS\BH05 7.20-8.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH05 Sample: 7.20-8.70m BGL

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground II	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor ::456866.530 N:525583.50		MS\BH05
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 9 of 15

## Figure MS\BH05.7 MS\BH05 8.70-10.20m BGL Title: PRELIMINARY G.I NZT



## Figure MS\BH05.8 MS\BH05 10.20-11.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North Yor ::456866.530 N:525583.50		MS\BH05						
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 10 of 15						

# Figure MS\BH05.9 MS\BH05 11.70-13.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH05 Sample: 11.70-13.20m BGL

# Figure MS\BH05.10 MS\BH05 13.20-14.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH05 Sample: 13.20-14.70m BGL

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Fax: 01972 735 399

#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT **Exploratory Hole No.** North-west of Redcar, North Yorkshire Client: AECOM MS\BH05 E:456866.530 N:525583.502 Start Date: 16/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) Ground Level (m): 7 484 11 of 15

## Figure MS\BH05.11 MS\BH05 15.00-17.80m BGL



## Figure MS\BH05.12 MS\BH05 17.80-19.80m BGL



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**FINAL** 

### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground Investigation for NZT **Exploratory Hole No.** North-west of Redcar, North Yorkshire Client: MS\BH05 **AECOM** E:456866.530 N:525583.502 Start Date: 16/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) Ground Level (m): 7 484 12 of 15

# Figure MS\BH05.13 MS\BH05 19.80-21.50m BGL



## Figure MS\BH05.14 MS\BH05 21.50-23.00m BGL



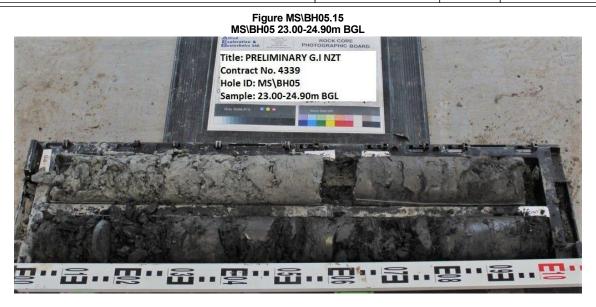
Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



#### **DRILLHOLE RECORD**

**FINAL** 

Project: Prelimina	Exploratory Hole No.			
Client: AECOM		n-west of Redcar, North Yo E:456866.530 N:525583.50		MS\BH05
Method (Equipment): Sonic/Rotary Coring (Boart Longyear I	.S250/Boart Longyear DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 13 of 15



## Figure MS\BH05.16 MS\BH05 24.90-26.50m BGL

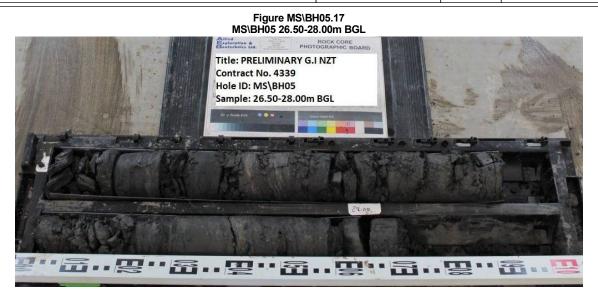


Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Fax: 0191 387

#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: AECOM MS\BH05 E:456866.530 N:525583.502 Start Date: 16/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) Ground Level (m): 7 484 14 of 15



## Figure MS\BH05.18 MS\BH05 28.00-29.50m BGL





#### DRILLHOLE RECORD

Status:-**FINAL** 

	I									
Project: Preliminary Onshore Ground I	Exploratory Hole No.									
Client: AECOM		-west of Redcar, North Yor ::456866.530 N:525583.50		MS\BH05						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 15 of 15						



#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

	<u>L</u>							
Project: Preliminary Onshore Ground	Expl	oratory Hole No.						
Client: AECOM		-west of Redcar, North Yo E:457033.748 N:525517.75		MS\BH06				
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet:	1 of 3			

SAMPI	LES & TE	ESTS			STRATA							
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill				
0.18 0.20-1.20 0.20-0.90 0.50	J1 SL1 <sub>(SS)</sub> B30 <sub>(SL1)</sub> ES1 <sub>(SL1)</sub>			7.93 7.80		0.05/ 0.18/ (0.72)	MADE GROUND (Grass over soft dark brown clayey topsoil).  MADE GROUND (Dark grey fused gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes vesicular slag. Cobbles are angular to subangular and include vesicular slag (75-100%)).					
0.50 0.50 0.90-1.20 1.00 1.00 1.20-2.70	J9(SL1) PID B31(SL1) ES2(SL1) J10(SL1) PID SL2(SS)	<0.1ppm		7.08		0.90	MADE GROUND (Black dark grey red brown gravelly sand with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes vesicular slag and ash. Cobbles are subangular and include vesicular slag (50-75%)).					
1.20-2.70 1.20-1.90 1.20 1.50 1.50 1.90-2.70 2.00	B32 <sub>(SL2)</sub> S ES3 <sub>(SL2)</sub> J11 <sub>(SL2)</sub> PID B33 <sub>(SL2)</sub> PID	50/90mm <0.1ppm <0.1ppm				(1.80)	MADE GROUND (Pink red clayey sandy gravel with high cobble and low boulder content and occasional fragments of metal. Sand is fine to coarse and includes ash. Gravel is fine to coarse angular to subangular and includes vesicular slag (50-75%) and concrete. Cobbles and boulders are angular to subangular and includes concrete).					
2.30 2.50 2.50 2.50 2.70-4.20 2.70-4.20 2.70	J12 <sub>(SL2)</sub> ES4 <sub>(SL2)</sub> PID SL3 <sub>(SS)</sub> B34 <sub>(SL3)</sub> S	<0.1ppm		5.28		2.70	1 100 BOL '					
3.00 3.00 3.00 3.20 3.20 3.70 4.00	ES5 <sub>(SL3)</sub> J13 <sub>(SL3)</sub> PID ES6 <sub>(SL3)</sub> PID PID J14 <sub>(SL3)</sub>	<0.1ppm <0.1ppm <0.1ppm				(1.70)	at c.2.70m BGL medium dense.					
4.20-5.70 4.20-5.20 4.20 4.50 4.50 4.90	SL4 <sub>(SS)</sub> B35 <sub>(SL4)</sub> S ES7 <sub>(SL4)</sub> PID J15 <sub>(SL4)</sub>	N13 <0.1ppm		3.58		(0.90)	at c.4.20m BGL medium dense.  MADE GROUND (Black sandy gravelly cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes vesicular slag and ash. Cobbles are angular to subangular and include vesicular slag (75-100)).					
5.30 5.30 5.40	ES8 <sub>(SL4)</sub> PID J16 <sub>(SL4)</sub>	<0.1ppm		2.68	×	5.30 (0.40) 5.70	Dark grey black silty SAND. Sand is fine to coarse. (Tidal Flat Deposits).					
5.40-5.70 5.70-7.20 5.70-6.45 5.70-6.45 5.70 6.30 6.45 6.45-7.20 6.70	B36 <sub>(SL4)</sub> SL5 <sub>(SS)</sub> J17 <sub>(SL5)</sub> B35 <sub>(SL5)</sub> S PID PID J18 <sub>(SL5)</sub> B37 <sub>(SL5)</sub> PID	N27 0.5ppm <0.1ppm <0.1ppm			×		Medium dense dark brown grey slightly silty SAND with rare fragments of shell. Sand is fine to medium. (Tidal Flat Deposits).					
7.20-8.70 7.20 7.20-7.95 7.20 7.30 7.70	SL6 <sub>(SS)</sub> J19 <sub>(SL6)</sub> B38 <sub>(SL6)</sub> S PID PID	N24 <0.1ppm <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - - - -						

		0pp		· · ·	/ ·L				
Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
24/05/2021 24/05/2021 25/05/2021	0.00 5.70 5.70	0.00 5.70 5.70	178 178 178 178	Damp Dry	0.20 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit excavated prior to drilling. (4) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (5) 4 No. vibrating piezometers installed at 4.50m, 10.00m, 19.20m and 30.00m BGL. (6) UXO carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C Contract No. All dimensions in metres Scale 1:50.00 For explanation of symbols and abbreviations see Key Sheets 4339

#### **SONIC SAMPLE HOLE RECORD**

Status:-**FINAL** 

	<u>L</u>							
Project: Preliminary Onshore Ground	Exploratory Hole No.							
Client: AECOM		-west of Redcar, North Yor E:457033.748 N:525517.75	MS\BH06					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	r DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 2 of 3				

SAMPL	SAMPLES & TESTS						STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/		
7.95 7.95-8.70 8.30	J20 <sub>(SL6)</sub> B39 <sub>(SL6)</sub> PID	<0.1ppm			×	- - - - -	Medium dense dark brown grey slightly silty SAND with rare fragments of shell. Sand is fine to medium. (Tidal Flat Deposits). (continued)			
8.70-10.20 8.70 8.70-9.45 8.70 9.30 9.30 9.45 9.45-10.20 9.70	SL7 <sub>(SS)</sub> J21 <sub>(SL7)</sub> B40 <sub>(SL7)</sub> S PID PID J22 <sub>(SL7)</sub> B41 <sub>(SL7)</sub> PID	N17 <0.1ppm <0.1ppm				(6.00)	at c.8.70m BGL sand.			
10.20 10.30 10.70 10.95	SL8 <sub>(SS)</sub> J23 <sub>(SL8)</sub> B42 <sub>(SL8)</sub> S PID PID J24 <sub>(SL8)</sub> B43 <sub>(SL8)</sub>	N29 <0.1ppm <0.1ppm			× · · · · · · · · · · · · · · · · · · ·					
11.30	PID	<0.1ppm			× · . · .	-				
11.70-13.20 11.70 11.70-12.45 11.70 11.70 12.30 12.45 12.45-13.20 12.70	$\begin{array}{c} SL9_{(SS)} \\ J25_{(SL9)} \\ B44_{(SL9)} \\ S \\ PID \\ PID \\ J26_{(SL9)} \\ B45_{(SL9)} \\ PID \\ \end{array}$	N51 2.6ppm <0.1ppm 5.1ppm		-3.72	X	11.70 - - - - - - (1.50) - -	Very dense dark brown grey slightly silty slightly gravelly SAND with occasional fragments of shell. Sand is fine to coarse. Gravel is fine to medium and includes mudstone. (Tidal Flat Deposits).			
13.20-14.70 13.20 13.70	SL10 <sub>(SS)</sub> S	50/280mm <0.1ppm		-5.22	xo	(0.70)	Very dense grey slightly silty gravelly SAND with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse rounded to subrounded. Cobbles are rounded to subrounded and include granite and sandstone.			
13.90	J28 <sub>(SL10)</sub>	kk		-5.92	<u>×</u> ×	13.90	(Tidal Flat Deposits). Soft thinly laminated grey brown sandy silty CLAY with			
14.30	PID	<0.1ppm			* - × - × - × - - × -	- - - - - -	occasional fragments of shell and traces of organic material. (Tidal Flat Deposits).			
14.60 14.70-16.20 14.70 14.70	J29 <sub>(SL10)</sub> SL11 S PID	N0 <0.1ppm			× × × × × × × × × × × × × × × × × × ×	(2.30)	at c.13.90m BGL clay is of low plasticity.  at c.14.70m BGL clay is of intermediate plasticity.  at c.14.70m BGL ATH Tool sunk under own weight.			
15.70	PID	<0.1ppm			×					

					~^					
Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
25/05/2021 27/05/2021	14.70 14.70	14.70 14.70	178 178	4.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178	100 100 100 100 100 100	Yes Yes Yes Yes No	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit excavated prior to drilling. (4) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (5) 4 No. vibrating piezometers installed at 4.50m, 10.00m, 19.20m and 30.00m BGL. (6) UXO carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.	

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

Start Date: 24/05/2021

3 of 3

	Regional Office:	Unit 20 Business Development Centre,	AMPLE HOLE RECOR	Tel: 01772 735 300 Fax: 01772	Status:- FINAL	
Project:	Pre	liminary Onshore Ground	Investigation for NZT		Exploratory Hole No.	
Client:	AECOM		Location: North-west of Redcar, I	North Yorkshire	MS\BH06	

SAMPLES & TESTS				STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
				-8 23	<u>× ·× ·</u>	16.20			
				-0.23		- 10.20	Boring complete at 16.20m BGL - continued by rotary drilling.	, , , , , , , , , , , , , , , , , , ,	1
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Boring Progress and Water Observations					L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standin	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
27/05/2021	16.20	16.20	178	4.00					(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit excavated prior to drilling. (4) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (5) 4 No. vibrating piezometers installed at 4.50m, 10.00m, 19.20m and 30.00m BGL. (6) UXO carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No	D.		
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457033,748 N:525517,758							
Method (Equipment Sonic/Rotary	e): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 1 of 17			

RUN	DETA	ILS					STRATA		
Depth	TCR (SCR) RQD	ture	ter	Reduced		Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	l list
16.30		RO		-8.23 -8.32		16.20 16.30	16.20-16.30m rotary openhole.	(1) Brown CLAY.	
(102mm)	100	SOIL				-	16.30m J57 16.30-22.00m Soil. 16.60m U58	Firm dark grey brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium subangular to subrounded and includes coal, sandstone, mudstone and limestone. (Glacial Till).  16.30m high strength. Clay is of birth a location.	
17.30						-	17.05m B59	high plasticity.	
	100					(2.00) - -	17.30m J1	17.30m clay is of intermediate plasticity.	
(102mm)				-10.32		- 18.30	17.55m J60 17.55m B61		
.0.00	95			.0.02		-	18.30m J62 18.30m B63	Stiff dark grey brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium subangular to subrounded and includes coal, sandstone, mudstone and limestone. (Glacial Till).	
(102mm)				-11.82		(1.50) - - - - - - - 19.80	18.85m U64		
18.60	0			-11.82		79.80 - (0.45)	19.80m J2	(1) Laminated brown CLAY with sand lenses. (Driller describes as 'firm'). (Glacial Deposits). 19.80m firm thinly laminated brown slightly sandy clay with some silt	

Drilling	Progress and	s and Water Observations			ard Pene	tration Test		Flush		General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks		
01/06/2021 01/06/2021 02/06/2021	16.20 16.30 16.30	16.20 16.30 16.30	5.42 0.00 0.00	17.30 19.80	S S	N23 N19	16.20 - 16.30 16.30 - 17.30 17.30 - 18.30 18.30 - 19.80 19.80 - 21.30	Water Water Water Water	100 100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection drilling. (4) High Pressur carried out. Refer to App No. vibrating piezometer	e Dilatometer testing sendix III for results. (5) 4 ss installed at 4.50m, 00m BGL. (6) UXO carried ructions. (7) Aquifer een 16.20-13.40m BGL		
	nensions i Scale 1:25			For e	xplana eviatio	tion of syr	mbols and by Sheets	Chec	ked by: .W.	Logged by: Contract G.T/R.C 4339			

Print Date and Time: 29/11/2021 14:48:45

Tel: 0191 387 4700 Fax: 0191 387 4710

	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4 Tel: 01772 735
E G		DRILLHOLE RECORD	
Destrute			

Status:- FINAL

Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client:	AECOM		-west of Redcar, North ` ::457033.748 N:525517		MS\BH06
Method (Equipme Sonic/Rotar	nt): y Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 2 of 17

RUN	DETA	AILS					STRATA		
Depth	TCR	ax e	ē	Reduced		Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
				-12.27		20.25		dustings on laminae. Clay is of	
(102mm)						- - - - (1.10) -		intermediate plasticity.  (1) Brown SAND.  (Glacial Deposits).	
21.30 (105mm)	100			-13.37		- 21.35 - -	21.30m J3 21.30m B66 21.30m J65	Stiff dark grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and	
22.00	90	NI		-14.02	- 0	_(0.65) - - 	22.00-22.90m non-intact.	includes sandstone, limestone and mudstone. (Glacial Till).  Extremely weak grey very clayey	
(102mm)						- - - - -(1.00) - -		MUDSTÓNE distinctly weathered to destructured. (In places recovered as clay). (Redcar Mudstone Formation).	
23.00		NR		-15.02		23.00	22.90-23.30m no recovery.		
(102mm)	77 (72) 38	13				-	23.30-24.30m subhorizontal to oblique (25-50 degrees) with occasional subvertical to vertical (80-90 degrees) closely spaced smooth planar to undulating open and tight clean and infilled (clay) discontinuities.	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
						- - -			

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		Ge	neral	
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Rer	narks	
				21.30	S	N24	21.30 - 22.00 22.00 - 23.00 23.00 - 24.30	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2 Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit excavated prior to drilling. (4) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (5) 4 No. vibrating piezometers installed at 4.50m, 10.00m, 19.20m and 30.00m BGL. (6) UXO carrie out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.		
	nensions ii Scale 1:25					tion of syr ns see Ke	nbols and by Sheets	Check	ked by:	Logged by: Contract N G.T/R.C 4339		

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explo	oratory Hole No.		
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457033,748 N:525517,758							
Method (Equipment): Sonic/Rotary Coring (E	Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet:	3 of 17		

RUN	DETA	AILS					STRATA	· · · · · · · · · · · · · · · · · · ·	int/
Depth	TCR (SCR) RQD	Fracture	Water	Reduced	Legend	Depth	Desc	ription	Instrument/ Backfill
& (Core Ø)	RQD	Frac	Wa	Level	Legena	(Thickness)	Discontinuity Detail	Main	list B
24.30	91 (67) 0	NR NI				-	24.30-24.40m no recovery. 24.40-24.50m non-intact.	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). (continued)	
(102mm)		25				- - (3.70) - - -	24.50-26.70m horizontal to subhorizontal (0-25 degrees) closely spaced smooth planar to undulating smooth open and tight clean discontinuities.		
25.40 (mm201)	83 (71) 0					-			
26.90	0	NR		-18.72		- - - - 26.70	26.70-28.40m no recovery.	(1) Grey MUDSTONE. (Driller describes as 'fractured').	
27.30 27.30	(0) 0 51 (37) 7			-19.32		(0.60) - - 27.30 - - -		Weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
(102mm)						-			

Drilling Progress and Water Observations					ard Pene	tration Test		Flush		Ge	neral	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
02/06/2021 03/06/2021 03/06/2021 04/06/2021	24.30 24.30 27.30 27.30	24.30 24.30 27.30 27.30	0.00 7.28 0.00 1.46				24.30 - 25.40 25.40 - 26.90 26.90 - 27.30 27.30 - 28.80	Water Water Water Water	100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection drilling. (4) High Pressur carried out. Refer to App No. vibrating piezometer	e Dilatometer testing sendix III for results. (5) 4 ss installed at 4.50m, 00m BGL. (6) UXO carried ructions. (7) Aquifer een 16.20-13.40m BGL	
	nensions i Scale 1:25					tion of syr	nbols and y Sheets	Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339	

Scale 1:25.00

t 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG 120 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL 161: 01772 735 300 Fax: 01772 735 999

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**AECOM** 

Project:

Client:

#### Status:-**DRILLHOLE RECORD FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT Location: North-west of Redcar, North Yorkshire MS\BH06 E:457033.748 N:525517.758 Ground Level (m): S 7.976 Start Date: 24/05/2021 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

RUN DETAILS STRATA										
Depth	TCR		ē	Reduced		Depth		scription		Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail		Main	Insti
		NI				-	28.40-28.80m non-intact.	Weak thinly lamin MUDSTONE disti (Redcar Mudston (continued)	nctly weathered.	
28.80	88 (81) 0	21				-	28.80-31.40m subhorizontal (5-25 degrees) very closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.			
(102mm)						- - (3.80) - - - - - -	30.10-30.20m 1 No. subvertical (75-85 degrees) undulating smooth tight clean discontinuity.			
30.30 (mm20)	51 (36) 13			-23.12		- - - - - - - 31.10				
(102mm)	100 (86) 19	20				-	31.40-31.80m subhorizontal (5-25 degrees) very	(Redcar Mudston	lerately weathered.	
31.80						-	closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.  31.60-31.80m 3 No. subvertical (75-85 degrees) planar smooth tight clean discontinuities.			
	100 (90) 19	10				-	31.80-33.10m subhorizontal (5-25 degrees) closel spaced planar to undulating smooth open and tight clean discontinuities.	,		

Drilling	Progress and	d Water Obser	/ations	Standa	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
04/06/2021 07/06/2021	31.10 31.10	31.10 31.10	0.00 7.31				28.80 - 30.30 30.30 - 31.10 31.10 - 31.80 31.80 - 33.10	Water Water Water Water	100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection drilling. (4) High Pressur carried out. Refer to App No. vibrating piezometer	e Dilatometer testing sendix III for results. (5) 4 rs installed at 4.50m, 00m BGL. (6) UXO carried ructions. (7) Aquifer een 16.20-13.40m BGL	
	nensions i Scale 1:25					tion of syr ns see Ke	mbols and Checked by: y Sheets K, W.		Logged by: G.T/R.C	Contract No. 4339		

Print Date and Time: 29/11/2021 14:48:46

◬	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 019 Tel: 01772 735 300 Fax: 017
		DRILLHOLE RECORD	
Project:			

Status:-**FINAL** Exploratory Hole No.

Preliminary Onshore Ground Investigation for NZT Client: Location:
North-west of Redcar, North Yorkshire MS\BH06 **AECOM** E:457033.748 N:525517.758 Ground Level (m): S 7.976 Start Date: 24/05/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) 5 of 17

PIIN	DETA	All S		Ι			ISTRATA				
Depth			_		d Description						
& (Core Ø)	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Inplion	Mair	<u> </u>	Instrument/ Backfill
(******)		ш					Discontinuity Detail	Weak th			//////
- F						-		MUDST	ONE modera	ed dark grey ately weathered.	
(102mm)								(Redcar	Mudstone F	ormation).	
=								`	,		
						-	32.70-32.80m 1 No. subvertical (65-85 degrees)				
						_	stepped smooth tight infilled (clay) discontinuity.				
						-					
33.10						_					
	100 (81) 10	8				_	33.10-35.90m subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight				
	10					-	infilled (clay) discontinuities.				
						-					
Ē						_					
(102mm)						-					
						-					
						-					
24.40						_					
34.10	100					(6.00)					
	(100) 15										
(102mm)						-					
) 5						-					
						-					
34.90											
	100 (97) 0					_					
	0					-					
						-					
						-					
m (m						-					
(102mm)						-					
		10				-	35.90-37.10m subhorizontal (5-25 degrees) and				
						-	35.90-37.10m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely to medium spaced planar to undulating smooth open and tight clean occasionally infilled (clay) discontinuities. 36.10-36.35m 1No vertical planar smooth clean				
							36.10-36.35m 1No vertical planar smooth clean				<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>

Drilling	Progress and	Water Obser	vations	Standa	Standard Penetration Test			Flush		General	
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Rer	narks
07/06/2021 08/06/2021	34.10 34.10	34.10 34.10	0.00	- 11			33.10 - 34.10 34.10 - 34.90 34.90 - 36.40	Water Water Water	100 100 100	(1) Description derived from drillers daily report vacuum excavation inspection pit attempted pit to drilling. (3) Inspection pit excavated prior to drilling. (4) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (5) No. vibrating piezometers installed at 4.50m, 10.00m, 19.20m and 30.00m BGL. (6) UXO ca out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BG prior to commencing rotary drilling.	
	ensions in metres For explanation of symbols and cale 1:25.00 abbreviations see Key Sheets Checked		ked by:	Logged by: G.T/R.C	Contract No. 4339						

	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 Tel: 01772 735 300 Fax: 0177
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Status:-**FINAL** 

Project:				P	relimina	ary Onsho	re Ground	Investigatio	n for NZT				Exploratory H	lole No.
Client:				AECO	М			Location: Nort	h-west of F E:457033	Redcar, I	North Yor 25517 75	kshire 8	MS\BH	06
Method ( Soni	Equipme c/Rota	ent): ry Cori	ng (B	oart Lor	ngyear L	.S250/Boa	art Longyea	ar DB520)	Ground Le	vel (m): 7.976	20011.10	Start Date: 24/05/2021	Sheet: 6 of 17	•
RUN	I DETA	AILS						STRATA						
Depth	TCR	Fracture	ter	Reduced	Lamand	Depth				Desci	ription			Instrument/ Backfill
(Core Ø)	(SCR) RQD	Frac	Water	Level	Legend	(Thickness)		Discontinuit	y Detail			Ma		Ins
36.40 (muzor)	83 (83) 19	<u> </u>		-29.12		37.10	discontinuity.	Discontinuit	y Detail		MUDST (Redca (continu	hinly laminat FONE moder r Mudstone f	ed dark grey rately weathered. Formation).	
						-								

Drilling	Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
08/06/2021	37.10	37.10	0.00				36.40 - 37.10	Water	100	Vacuum excavation insp to drilling. (3) Inspection drilling. (4) High Pressur carried out. Refer to App No. vibrating piezometer	e Dilatometer testing bendix III for results. (5) 4 rs installed at 4.50m, .00m BGL. (6) UXO carried rructions. (7) Aquifer een 16.20-13.40m BGL	
All dimensions in metres For explana Scale 1:25.00 abbreviatio					Che	cked by: K.W.	Logged by: G.T/R.C	Contract No. 4339				

Print Date and Time: 29/11/2021 14:48:46

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	ject: Preliminary Onshore Ground Investigation for NZT								
Client: AECOM		-west of Redcar, North Yor E:457033.748 N:525517.75		MS\BH06					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 7 of 17					

## Figure MS\BH06.1 MS\BH06 0.20-1.20m BGL



## Figure MS\BH06.2 MS\BH06 1.20-2.70m BGL





#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ect: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Yor ::457033.748 N:525517.75		MS\BH06			
Method (Equipment): Sonic/Rotary Cor	ing (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 8 of 17			

## Figure MS\BH06.3 MS\BH06 2.70-4.20m BGL



## Figure MS\BH06.4 MS\BH06 4.20-5.70m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yor ::457033.748 N:525517.75		MS\BH06				
Method (Equipment): Sonic/Rotary (	Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 9 of 17				

## Figure MS\BH06.5 MS\BH06 7.20-8.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH06 Sample: 7.20-8.70m BGL

## Figure MS\BH06.6 MS\BH06 8.70-10.20m BGL ROCK CORE PHOTOGRAPHIC BOARD Allied Exploration & Gestechnics Ltd. Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH06 Sample: 8.70-10.20m BGL

Contract No.: 4339

# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 300 Fax: 01772 735 999



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North You ::457033.748 N:525517.75	MS\BH06					
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 10 of 17				

## Figure MS\BH06.7 MS\BH06 10.20-11.70m BGL



## Figure MS\BH06.8 MS\BH06 11.70-13.20m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	roject: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yor ::457033.748 N:525517.75	MS\BH06					
Method (Equipment): Sonic/Rotary Cor	ring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 11 of 17				

## Figure MS\BH06.9 MS\BH06 13.20-14.70m BGL



## Figure MS\BH06.10 MS\BH06 14.70-16.20m BGL



Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG
Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL
Tel: 0191 387 4700 Fax: 0191 387 4710
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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH06 **AECOM** E:457033.748 N:525517.758 | Ground Level (m): | 7.976 Start Date: 24/05/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) 12 of 17

## Figure MS\BH06.11 MS\BH06 16.30-18.30m BGL





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#### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Exploratory Hole No.			
Client:	ECOM	-west of Redcar, North Yor ::457033.748 N:525517.75	MS\BH06	
Method (Equipment): Sonic/Rotary Coring (Boar	t Longyear LS250/Boart Longyea	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 13 of 17



#### Figure MS\BH06.14 MS\BH06 23.00-25.40m BGL



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#### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Exploratory Hole No.			
Client:	AECOM	-west of Redcar, North Yor ::457033.748 N:525517.75	MS\BH06	
Method (Equipment): Sonic/Rotary Cor	ring (Boart Longyear LS250/Boart Longyea	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 14 of 17



#### Figure MS\BH06.16 MS\BH06 27.30-30.30m BGL



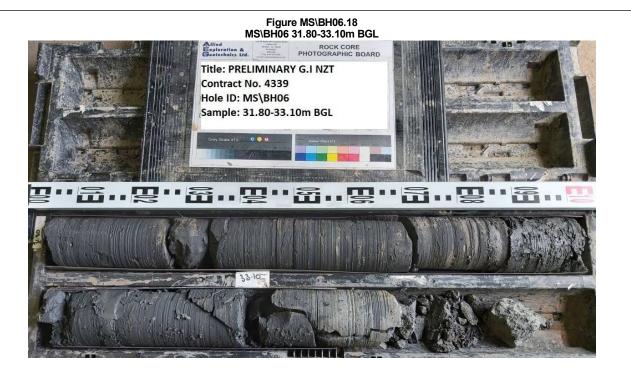
Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Grou	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yo ::457033.748 N:525517.7	MS\BH06	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Long	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 15 of 17





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

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor ::457033.748 N:525517.75		MS\BH06
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 16 of 17



## Figure MS\BH06.20 MS\BH06 34.90-36.40m BGL ROCK CORE PHOTOGRAPHIC BOARD Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH06 Sample: 34.90-36.40m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	roject: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North \ :457033.748 N:525517.	MS\BH06				
Method (Equipment Sonic/Rotary	nt): y Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 17 of 17			



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#### **SONIC SAMPLE HOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Ground	Explo	ratory Hole No.			
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790			ı	MS\BH07
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet:	1 of 3

SAMPLES & TESTS				STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
				7.28		0.05/	MADE GROUND (Grass over dark brown clayey topsoil).		
				6.98		- 0.35	MADE GROUND (Light brown slightly sandy gravel. Gravel is		
0.35 0.35-1.20	ES1 <sub>(SL1)</sub> SL1 <sub>(SS)</sub>				$\bowtie$	<u> </u>	coarse angular to subangular and includes limestone).	N   N   N	
0.35	PID	<0.1ppm			$\bowtie$	(0.60)	MADE GROUND (Grey brown clayey sand and gravel. Gravel is fine to coarse angular to subangular and includes slag. Slag is		
0.40 0.50	J1 ES2 <sub>(SL1)</sub>			6.38		0.95	vesicular (100%)).	* ************************************	
0.50 0.50	J3A <sub>(SL1)</sub> PID	<0.1ppm			$\bowtie$		MADE GROUND (Blue light grey slightly sandy gravel and		
1.00-2.00	ES3 <sub>(SL1/SL2</sub>				$\bowtie$	-	cobbles. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are subrounded to subangular and		
1.00 1.20-2.70	PID SL2 <sub>(SS)</sub>	<0.1ppm			$\bowtie$	-	include slag. Slag is vesicular (100%)).		
1.20	C	N25					(Engineer notes slightly saturated). at c.1.20m BGL medium dense.	14-12	
					$\bowtie$	-	at c. r.zom BGL medium dense.		
2.00-2.70 2.00	B4 <sub>(SL2)</sub>	<0.1ppm			$\bowtie$	-			
					$\bowtie$	(3.25)			
2.70-4.20	SL3 <sub>(SS)</sub>				$\bowtie$	-	at c.2.70m BGL loose.	1°41-10	
2.70-4.20 2.70-4.20	ES5 <sub>(SL3)</sub> B6 <sub>(SL3)</sub>					-			
2.70 2.70	B6 <sub>(SL3)</sub> C PID	N7			$\bowtie$				
2.70	PID	<0.1ppm			$\bowtie$	-		同国	
						[			
					$\bowtie$	[		PE 6	
				0.40	$\bowtie$	-			
4.20-5.70	SL4 <sub>(SS)</sub>			3.13		4.20	MADE GROUND (Medium dense grey brown sand and gravel.		
4.20-4.65 4.20	ES7 <sub>(SL4)</sub>	N18			$\bowtie$	(0.45)	Gravel is fine to coarse angular to subangular and includes slag.		
4.20	PID	1.0ppm		2.68	×	- 4.65 -	Mild tar odour). ∖(Engineer notes slightly saturated and slag with tar coating).		
4.65-5.00 4.65	ES8 <sub>(SL4)</sub>	<0.1ppm			× .	-	Black yellow brown SAND with occasional pockets of soft black		
5.00-5.70	B10 <sub>(SL4)</sub>				×	- (0.95)	silt. Sand is fine to coarse. Mild hydrocarbon odour.		
					×	-	(Tidal Flat Deposits).		
5.50	10			1.73	× . :	5.60			
5.50	J9 <sub>(SL4)</sub> PID	<0.1ppm			0	-	Dense yellow brown slightly gravelly SAND with occasional shell	10 11	
5.70-7.20 5.70-6.45	SL5 <sub>(SS)</sub>				. · . · a · .		fragments. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded and includes mudstone, sandstone and	000	
5.70	B11 <sub>(SL5)</sub> S	N36			0		limestone.	0	
6.00	J12 <sub>(SL5)</sub>						(Tidal Flat Deposits).		
6.45-7.20	B13 <sub>(SL5)</sub>				0	[(1.75) -		0 0	
6.50 6.50	J14 <sub>(SL5)</sub> PID	<0.1ppm				-			
		- FF				-			
7.00	J15 <sub>(SL5)</sub>					-		000	
7.20-8.70 7.20	SL6 <sub>(SS)</sub>	N5		-0.02	× ×	- 7.35 -	Soft dark grey brown silty CLAY with frequent traces of organic	70000	
7.35-7.55	ES16				× × :	-	material.	0000	
7.35 7.35	ES(M)17 <sub>(SL</sub> PID	6) <0.1ppm			X X	- (0.90)	(Tidal Flat Deposits).	0000	
7.50	J19 <sub>(SL6)</sub>				<u> </u>	<u> </u>	at c.7.50m BGL clay is of high plasticity.	000	

Boring Progress and Water Observations			Liner Sample Information				General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
30/06/2021	0.00	0.00	178		0.35 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.60m and 5.80-7.30m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 16.55-14.50mprior to commencing rotary drilling. (7) Unable to carry out High Pressure Dilatometer test between 22.80-25.20m BGL due to poor ground conditions. (8) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.

Checked by:  $\mathcal{K}, \mathcal{W}.$ Logged by: G.T/M.B/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	ject: Preliminary Onshore Ground Investigation for NZT						
Client:	AECOM		-west of Redcar, North Yor E:457195.207 N:525424.79	MS\BH07			
Method (Equipment): Sonic/Rotary Coring	g (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 2 of 3		

SAMPI	LES & TI	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.55-8.25 8.00 8.25-8.70	B18 <sub>(SL6)</sub> J20 <sub>(SL6)</sub> B21 <sub>(SL6)</sub>			-0.92	× × × × × × × × × × × × × × × × × × ×	- - 8.25 -	Yellow brown SAND with occasional fine to coarse gravel sized	0000	
8.50	PID	<0.1ppm			× × · · ·	-	pockets of soft brown silty clay. Sand is fine to coarse. (Tidal Flat Deposits).		
8.70-10.20 8.70-9.45 8.70 9.00	SL8 <sub>(SS)</sub> B22 <sub>(SL8)</sub> S J23 <sub>(SL8)</sub>	N28			X X X X X X X X X X X X X X X X X X X	- - - (1.95)			
9.45-10.20 9.50 9.50	B24 <sub>(SL8)</sub> J25 <sub>(SL8)</sub> PID	<0.1ppm			× × × × × × × × × × × × × × × × × × ×	-			
10.00	J26 <sub>(SL8)</sub>			-2.87	× ×	10.20			
10.20-11.70 10.20-11.00 10.20 10.50 10.50	SL9 <sub>(SS)</sub> B27 <sub>(SL9)</sub> S J28 <sub>(SL9)</sub> PID	N26 <0.1ppm			XO	-	Medium dense becoming dense yellow brown slightly gravelly silty SAND with frequent fragments of shell. Sand is fine to coarse. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone. (Tidal Flat Deposits).		
11.00-11.70 11.00	B29 <sub>(SL9)</sub> J30 <sub>(SL9)</sub>				×0	-	(Tidal Plat Deposits).		
11.50 11.50 11.70-13.20 11.70-12.45 11.70 12.00	J31 <sub>(SL9)</sub> PID SL10 <sub>(SS)</sub> B32 <sub>(SL10)</sub> S J33 <sub>(SL10)</sub>	<0.1ppm N33			×o'.'.	- - - (3.45) - -			
12.45-13.20 12.50 12.50	B34 <sub>(SL10)</sub> J35 <sub>(SL10)</sub> PID	<0.1ppm			× · · · · · · · · · · · · · · · · · · ·				
13.20-14.70 13.20-13.40 13.20	J36 <sub>(SL10)</sub> SL11 <sub>(SS)</sub> ES37 <sub>(SL11)</sub> S	N41		-6.32	× · · · · · · · · · · · · · · · · · · ·	- - - - - 13.65	between c.13.40-13.65m BGL dark brown.		
13.20 13.50 13.65-13.85 13.65 13.85 E	PID J38 <sub>(SL11)</sub> ES39 <sub>(SL11)</sub> PID S(M)40 <sub>(SL</sub> B41 <sub>(SL11)</sub>	<0.1ppm <0.1ppm			× × × × × × × × × × × × × × × × × × ×	- - - - (0.95)	Soft dark grey brown slightly sandy silty CLAY with frequent traces of organic material. (Tidal Flat Deposits). 14.00m BGL clay is of intermediate plasticity.		
14.00 14.50 14.65 14.70-15.12	J42 <sub>(SL11)</sub> J43 <sub>(SL11)</sub> PID UT1	<0.1ppm		-7.27 -7.47	× × -	14.60	Dark brown clayey SAND. Sand is fine to medium. (Tidal Flat Deposits).		
14.70-15.12 14.70-16.20 14.70 14.80-15.60 15.00	SL12 <sub>(SS)</sub> J44 <sub>(SL12)</sub> B45 <sub>(SL12)</sub> J46 <sub>(SL12)</sub>	(35)			- x - x - x - x - x - x - x - x - x - x	- - -(0.80) -	Soft thinly laminated grey brown silty CLAY. (Tidal Flat Deposits).		
15.70 15.70-15.90	J47 <sub>(SL12)</sub> ES48 <sub>(SL12)</sub>			-8.27 -8.37	× × × × × × × × × × × × × × × × × × ×	15.60 15.70	Firm grey black organic CLAY. Mild organic odour. (Tidal Flat Deposits).		

Borin	g Progres	s and Wat	er Observa	tions	Liner Sample Information				General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
30/06/2021 01/07/2021	13.20 13.20	13.20 13.20	178 178		8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178 178 178 178 178 178	100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.60m and 5.80-7.30m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 16.55-14.50mprior to commencing rotary drilling. (7) Unable to carry out High Pressure Dilatometer test between 22.80-25.20m BGL due to poor ground conditions. (8) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.

Checked by: Logged by: G.T/M.B/R.C Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.	
Client:	AECOM		-west of Redcar, North Y -:457195.207 N:525424.		MS\BH07	
Method (Equipment): Sonic/Rotary C	oring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 3 of 3	
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SAMPLES & TESTS					STRATA	ent/
Depth Type Test No Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
15.70 ES(M)49 <sub>(SL12)</sub> 15.90-16.20 B50 <sub>(SL12)</sub> 16.00 J51 <sub>(SL12)</sub> 16.20-16.55 UT2 (150)		-9.22		(0.85)	Stiff thinly laminated red brown slightly gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone and limestone	
				F		

Borin	g Progres	s and Wate	er Observa	itions	L	iner Sample	e Informatio	on	General			
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks			
01/07/2021	16.55	16.20	178	3.80					(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.60m and 5.80-7.30m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 16.55-14.50mprior to commencing rotary drilling. (7) Unable to carry out High Pressure Dilatometer test between 22.80-25.20m BGL due to poor ground conditions. (8) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.			

Checked by: Logged by: G.T/M.B/R.C For explanation of symbols and abbreviations see Key Sheets Contract No. All dimensions in metres Scale 1:50.00 4339

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explor	atory Hole No.
Client:	AECOM		-west of Redcar, North Yor E:457195.207 N:525424.79		N	IS\BH07
Method (Equipment): Sonic/Rotary Co	ring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet:	1 of 17

RUN	DETA	TAILS STRATA						STRATA					
Depth &	TCR (SCR)	Fracture	Water	Reduced	Legend	Depth	Des	scription					
(Core Ø)	(SCR) RQD	l .	%	Level	Legend	(Thickness)	Discontinuity Detail	Main					
16.60 E	100	RO SOIL		-9.22 -9.27	<u> </u>	16.55 16.60/	16.60-22.30m soil.	(1) Firm brown CLAY. (Glacial Deposits).					
16.80 (mwz)						1	16.70m J52	Stiff dark brown slightly sandy slightly					
16.90 💆	100				·	1	16.80m ES55 16.80m ES(M)56	gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to					
2m(f1	100					-	` '	subangular and includes coal.					
17.10 E	100				<u></u>	-	17.00m J53	mudstone, sandstone and limestone.					
	100					ļ.	17.10m U54	(Glacial Till). 17.10m clay is of intermediate					
(mu						}		plasticity.					
(102mm)						}							
						}							
17.60	100					}	17.60m B58						
						(2.30)	17.70m J57						
						<u> </u>							
(102mm)						<u> </u>							
(10)					- <u>°</u> .	<del> </del>							
						1	18.10m U59	18.10m high strength. Clay is of					
18.30					<u> </u>	†		intermediate plasticity.					
	56					1	18.30m J1						
					<u> </u>	-							
						ſ							
(102mm)					· -	[							
(102						_							
				-11.57		18.90							
								Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse.					
19.10	100					]	19.00m J60	Gravel is fine to coarse angular to					
	100				<u> </u>	-	19.10m B62 19.20m J61	subangular and includes coal,					
						}-	19.20m J61	limestone, mudstone and sandstone. (Glacial Till).					
mm)					<u> </u>	}	19.40m U63	19.40m clay is of intermediate					
(102mm)					<u> </u>	†	10.4011 000	plasticity.					
					<u> </u>	}							
40.00						ł							
19.80	47					}	19.80m B65						
						<b>†</b>	19.90m J64						
						<u> </u>							
						}							
					<u> </u>	†							
						Ţ							
						-							
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Drilling	Progress and	l Water Observ	/ations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
01/07/2021 01/07/2021	16.55 16.90	16.55 16.90	4.68 0.00	18.30	S	N16	16.60 - 16.80 16.80 - 16.90	Water Water	100 100	Vacuum excavation insp	rom drillers daily report. (2) ection pit attempted prior	
02/07/2021 02/07/2021	16.90 19.10	16.90 19.10	0.00 0.00				16.90 - 17.10 17.10 - 17.60	Water Water	100 100	Double installation: 2 No standpipes installed between		
05/07/2021	19.10	19.10	6.71				17.60 - 18.30 18.30 - 19.10	Water Water	100 100	5.80-7.30m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 16.55-14.50mprior to commencing rotary		
							19.10 - 19.80 19.80 - 21.30	Water Water	100 100	drilling. (7) Unable to car	ry out High Pressure 1 22.80-25.20m BGL due	
All dimensions in metres						tion of syr	mbols and	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:		s. (8) High Pressure ed out. Refer to Appendix Contract No. <b>4339</b>	

# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 300 Fax: 01772 735 999

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Investigation	for NZT		Exploratory Hole No.
Client: AECOM		-west of Redcar, North Yor E:457195.207 N:525424.79		MS\BH07
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 2 of 17

RUN	DETA	ILS					STRATA	<u> </u>	ıt,
Depth	TCR	ture	Ţ.	Reduced		Depth	Desci	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
(102mm)						(3.40) - - - -		Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes coal, limestone, mudstone and sandstone. (Glacial Till). (continued)	
21.30	100				<u> </u>	-			
	100					- - -	21.40m J66 21.40m ES67 21.40m ES(M)68		
(102mm)				-14.97		- - - - 22.30	21.90m U69	21.90m high strength. Clay is of low plasticity.	
22.80		NI				- - - (0.85)	22.30-22.80m non-intact. Recovered as clay. 22.40m ES70	Extremely weak thinly laminated dark grey MUDSTONE residual. (Recovered as gravelly clay). (Redcar Mudstone Formation).	
23.00 L)	0 (0) 0 15 (0) 0	10		-15.82		- - - - 23.15	22.80-23.15m horizontal (0-5 degrees) closely spaced undulating rough partly open infilled (grey sandy clay) discontinuities.		
	0	NR		-10.02		-	23.15-24.10m no recovery.	(1) Grey MUDSTONE. (Driller describes as 'weathered').	
(102mm)				-16.77		(0.95) - - - - - 24.10			
24.30 <u>£</u> 24.40 Z	100	NI		-17.07		(0.30)	24.10-24.40m non-intact.	Extremely weak dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
24.40 (0	0 0	NR		-17.07			24.40-25.90m no recovery.		

Drilling	Progress and	l Water Obser	vations	Standa	rd Pene	tration Test		Flush		General			
Date	Depth	Casing	Wat Stand	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks			
05/07/2021 06/07/2021	23.00 23.00	23.00 23.00	0.0 2.4	 21.30	Ø	N21	21.30 - 22.80 22.80 - 23.00 23.00 - 24.30 24.30 - 24.40 24.40 - 24.90	Water Water Water Water Water	100 100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed bets 5.80-7.30m BGL. (5) UX Client instructions. (6) At between 16.55-14.50mp drilling. (7) Unable to car Dilatometer test betweer to poor ground condition	veen 1.70-4.60m and O carried out as per the quifer protection installed rior to commencing rotary ry out High Pressure n 22.80-25.20m BGL due s. (8) High Pressure		
All din			tion of syr	mbols and by Sheets	Chec	ked by: .W.	Ill fol. reguled by: G.T/M.B/R.C	ed out. Refer to Appendix Contract No. <b>4339</b>					

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL

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# Project: Preliminary Onshore Ground Investigation for NZT Client: AECOM Client: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790 Method (Equipment): Ground Level (m): Start Date: 30/06/2021 Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) DRILLHOLE RECORD Exploratory Hole No. Exploratory Hole No. Start Date: 30/06/2021 3 of 17

DIIN	DETA	ui e						TRATA				<u> </u>
								Descri	intion			Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	D: " " D		іриоп			Bac
<u> </u>		<u>г</u> _				,	Discontinuity Det	all	(4) 0	Main		-
(102mm	(0) 0								(1) Grey i	Scribes as	E. badly broken	
(1									and fractu	ured'). (cont	inued)	
24.90						-						
	0 (0) 0					_						
mm (	U					-						
(102mm)						-						
25.40						-						
25.40	0					-						
<u>e</u>	(0)					-						
(102mm)						70.05)						
1						(2.65) -						
		RO				_	05.00.00.00					
		RU				_	25.90-26.20m rotary openhole d	rilling				
						-						
26.20	43	NR				-	26.20-27.05m no recovery.					
	(30)					-	•					
						-						
						-						
						_						
mu (mu						-						
(102mm)				-19.72		27.05						
		9				-	27.05-27.60m horizontal to obliq closely spaced undulating rough tig	ue (0-40 degrees)	Extremely	y weak dark	grey ly weathered	
						-	clayey sand and gravel) discontinu	ities.	(Redcar N	Mudstone F	ormation).	
						-			`		,	
						-						
27.70	100	NI 8				(1.25)	27.60-27.70m non-intact.	animantal (C. CC				
	(89) 50	o				-	27.70-28.30m horizontal to subh degrees) closely spaced planar to	indulating smooth				
	50					-	tight partly open clean discontinuitie	es.				
(102mm)						-						<i>\\\\\\\</i>
(102						-						
				-20.97		- 28.30						
28.40		5					28.30-28.80m horizontal (0-5 de spaced planar smooth tight clean of	grees) medium				¬(////)
	80 (70)					_	spaced planal sillootii tigrit deali t	nacontinuites.				
	,											<u> </u>

Drilling	Progress and	l Water Obser	vations	Stand	ard Pene	tration Test		Flush		General			
Date	Depth	Casing	Wate Standir		Туре	Result	From - To	Туре	Returns (%)	Remarks			
06/07/2021 07/07/2021 07/07/2021 08/07/2021	25.80 25.80 28.40 28.40	25.80 25.80 26.20 26.20	0.00 0.00 0.00 6.10	25.90	C	N32 N47	24.90 - 25.40 25.40 - 25.90 25.90 - 26.20 26.20 - 27.70 27.70 - 28.40 28.40 - 28.90	Water Water Water Water Water Water	100 100 100 100 100 100	Vácuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed beto 5.80-7.30m BGL. (5) UX Client instructions. (6) Au between 16.55-14.50mp drilling. (7) Unable to car	veen 1.70-4.60m and O carried out as per the quifer protection installed rior to commencing rotary ry out High Pressure 1 22.80-25.20m BGL due		
	nensions ir Scale 1:25					tion of syr	mbols and ev Sheets	Chec	ked by:		ed out. Refer to Appendix Contract No. 4339		

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A	Head Office: Regional Office
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## **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Ground	Exploratory Hole	No.						
Client: AECOM								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 4 of 17				

RUN	DETA	AILS					STRATA		ıt/
Depth			-ie	Reduced		Depth	Desci	ription	Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture	Water	Level	Legend	(Thickness)		Main	lnstr Ba
(102mm) (mi	100 (92) 77	NR 6				- - - - -	28.80-28.90m no recovery. 28.90-29.90m horizontal to subhorizontal (0-80 degrees) closely spaced undulating to planar smooth tight to partly open clean discontinuities.	Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)  29.00m moderately weak.	
30.10 (402mm)	100 (91) 77	NI 7				- - - - - -	29.90-30.10m non-intact.  30.10-31.60m subhorizontal to oblique (5-50 degrees) closely spaced planar to undulating smooth tight to partly open clean discontinuities.		
(102mm)						-			
31.60 (102mm)	100 (77) 60	9				- (6.50) - - - - - -	31.60-31.90m horizontal to subvertical (0-75 degrees) closely spaced undulating rough tight to partly open infilled (gravelly clay) discontinuities.  31.90-32.80m oblique (30-60 degrees) closely spaced planar to undulating smooth tight to open clean discontinuities.		

Drilling	g Progress and	I Water Observ	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Remarks		
							28.90 - 30.10 30.10 - 31.60 31.60 - 33.10	Water Water Water	100 100 100	Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed bet 5.80-7.30m BGL. (5) UX Client instructions. (6) A between 16.55-14.50mp drilling. (7) Unable to cal Dilatometer test between to poor ground condition	O carried out as per the quifer protection installed rifor to commencing rotary rry out High Pressure 1 22.80-25.20m BGL due as. (8) High Pressure	
	nensions ii Scale 1:25				tion of syr ns see Ke	nbols and by Sheets	Check	ked by:	Ill fot regulated by: G.T/M.B/R.C	ed out. Refer to Appendix Contract No. <b>4339</b>		

# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 300 Fax: 01772 735 999

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#### DRILLHOLE RECORD

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North Yor -:457195.207 N:525424.79			MS\BH07					
Method (Equipme Sonic/Rotar	<sub>ont):</sub> y Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet:	5 of 17					

RUN	DETA	AILS					STRATA		i it/
Depth	TCR	ture	Į į	Reduced		Depth	Descr	iption	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst B
33.10	100	6				- - - -	32.80-33.10m horizontal (0-5 degrees) closely spaced planar smooth tight to partly open clean discontinuities.  33.10-33.60m horizontal to subhorizontal (0-30	Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
	(82) 57	NI				- - -	degrees) closely spaced planar to undulating smooth partly open to open clean discontinuities.  33.60-33.75m non-intact.		
(102mm)		9				- - - -	33.75-34.20m horizontal (0-5 degrees) closely spaced planar smooth to rough partly open clean discontinuities.		
34.80		NI 8		-27.47		- - - - - 34.80	34.20-34.35m non-intact.  34.35-34.80m horizontal (0-5 degrees) closely spaced planar smooth partly open clean discontinuities.		
	67 (56) 43	NR		-27.97		- (0.50) - - 35.30	34.80-35.30m no recovery.	(1) Grey MUDSTONE. (Driller describes as 'heavily fractured').	
(102mm)		6 NI				- - - - (1.00) - -	35.30-36.20m horizontal (0-5 degrees) closely spaced planar to undulating smooth tight to partly open clean discontinuities.  36.20-36.30m non-intact.	Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).	
36.30	60 (29) 14	NR	-	-28.97		36.30 - -(0.40)	36.30-36.70m no recovery.	(1) Grey MUDSTONE. (Driller describes as 'heavily fractured').	

Drilling Progress and Water Observations			Standa	ard Pene	tration Test		Flush			General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
08/07/2021 09/07/2021	34.80 34.80	28.50 28.50	0.00 1.60				33.10 - 34.60 34.80 - 36.30 36.30 - 37.30	Water Water Water	100 100 100	Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed bets 5.80-7.30m BGL. (5) UX Client instructions. (6) Al between 16.55-14.50mp drilling. (7) Unable to car Dilatometer test betweer to poor ground condition	veen 1.70-4.60m and O carried out as per the quifer protection installed rior to commencing rotary rry out High Pressure n 22.80-25.20m BGL due s. (8) High Pressure
All dimensions in metres Scale 1:25.00				For explanation of symbols and abbreviations see Key Sheets			l 1	ked by:	Dilatometer testing carrie	ed out. Refer to Appendix Contract No. <b>4339</b>	

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<b>6</b>	DRIL	LHOLE F	Status:- FINAL		
Project:	Project: Preliminary Onshore Ground Investigation for NZT				
Client:	AECOM		-west of Redcar, North Yor ::457195.207 N:525424.79		MS\BH07
Method (Equipment Sonic/Rotary	): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 6 of 17

Reduced   Description   Desc												
8 -29.37 36.70 36.70-37.30m horizontal to subvertical (0-75 degrees) closely spaced planar smooth tight to partly open infilled (clayey sand and gravel) discontinuities.  Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).	RUN	I DETA	ILS					STRATA			H,	
8 -29.37 36.70 36.70-37.30m horizontal to subvertical (0-75 degrees) closely spaced planar smooth tight to partly open infilled (clayey sand and gravel) discontinuities.  Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).	Depth	TCR	e z	<u></u>	Reduced		Donth	Desc	ription		ume	
8 -29.37 36.70 36.70-37.30m horizontal to subvertical (0-75 degrees) closely spaced planar smooth tight to partly open infilled (clayey sand and gravel) discontinuities.  Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).	& (Core Ø)	(SCR) RQD	-racti Inde	Wat	Level	Legend	(Thickness)				Instr	
36.70-37.30m horizontal to subvertical (0-75 degrees) closely spaced planar smooth tight to partly open infilled (clayey sand and gravel) discontinuities.  Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).			_				-					
-29.97	l a		8		-29.37		36.70	36.70-37.30m horizontal to subvertical (0-75	Wook to modium atron	a grov dork		
-29.97	02mr						-	degrees) closely spaced planar smooth tight to partly	grey fossiliferous MUD	STONE		
-29.97	=						(0.00)	partially weathered.				
20.57 37.30 Complete at 37.30m BGL.							(0.60)		(rteadar madatorie i or	mation).		
29.97 37.30 Complete at 37.30m BGL.							1					
Complete at 31.30m BGL.					-29.97		37.30		Commission of 27 20m D	21		
							-		Complete at 37.30m B	JL.		
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Drilling Progress and Water Observations			Standard Penetration Test		Flush			General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
09/07/2021	37.30	28.50	0.00							Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed bets 5.80-7.30m BGL. (5) UX Client instructions. (6) Au between 16.55-14.50mp drilling. (7) Unable to car Dilatometer test betweer to poor ground condition	veen 1.70-4.60m and O carried out as per the quifer protection installed rior to commencing rotary ry out High Pressure 1 22.80-25.20m BGL due
All dimensions in metres				tion of syr	mbols and	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Ill foll regided by: G.T/M.B/R.C	Contract No.		

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

#### Status:-**DRILLHOLE RECORD FINAL**

Project: Preliminary Onshore Groun	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yo E:457195.207 N:525424.7	MS\BH07	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart L	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 7 of 17



# Figure MS\BH07.2 MS\BH07 1.20-2.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH07 Sample: 1.20-2.70m BGL 里"高,里"高,里"高,里"高,里"高,<mark>里"高,里"商,</mark>

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ect: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yor ::457195.207 N:525424.79	MS\BH07		
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 8 of 17	

## Figure MS\BH07.3 MS\BH07 2.70-4.20m BGL



#### Figure MS\BH07.4 MS\BH07 4.20-5.70m BGL



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#### **DRILLHOLE RECORD FINAL**

Project: Preliminary Onshore Ground Investigation for NZT **Exploratory Hole No.** North-west of Redcar, North Yorkshire Client: MS\BH07 **AECOM** E:457195.207 N:525424.790 | Ground Level (m): | 7.330 Start Date: 30/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) 9 of 17

## Figure MS\BH07.5 MS\BH07 5.70-7.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH07 Sample: 5.70-7.20m BGL

## Figure MS\BH07.6 MS\BH07 7.20-8.70m BGL



Project:

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# DRILLHOLF RECORD

	FINAL
Preliminary Onshore Ground Investigation for NZT	Exploratory Hole No.

Client: Location: MS\BH07 **AECOM** North-west of Redcar, North Yorkshire E:457195.207 N:525424.790

Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

Start Date: 30/06/2021 Ground Level (m): 7 330

Status:-

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## Figure MS\BH07.7 MS\BH07 8.70-10.20m BGL



## Figure MS\BH07.8 MS\BH07 10.20-11.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT						
Client:	СОМ	Location: North E	MS\BH07				
Method (Equipment): Sonic/Rotary Coring (Boart	Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 11 of 17		

## Figure MS\BH07.9 MS\BH07 11.70-13.20m BGL



#### Figure MS\BH07.10 MS\BH07 13.20-14.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yor ::457195.207 N:525424.79	MS\BH07		
Method (Equipment): Sonic/Rotary Coring	(Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 12 of 17	

## Figure MS\BH07.11 MS\BH07 14.70-16.20m BGL



## Figure MS\BH07.12 MS\BH07 16.60-17.60m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Exploratory Hole No.						
Client:	AECOM		-west of Redcar, North Yor ::457195.207 N:525424.79	MS\BH07			
Method (Equipment): Sonic/Rotary Coring (I	Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.330	Start Date: 30/06/2021	13 of 17		

## Figure MS\BH07.13 MS\BH07 17.60-19.10m BGL



Figure MS\BH07.14 MS\BH07 19.10-21.30m BGL

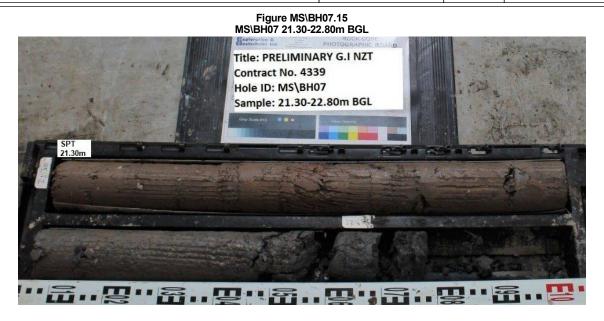


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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground In	Exploratory Hole No.			
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790			MS\BH07
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 14 of 17



## Figure MS\BH07.16 MS\BH07 22.80-27.70m BGL



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#### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Ground	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yo E:457195.207 N:525424.79	MS\BH07	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 15 of 17



#### Figure MS\BH07.18 MS\BH07 28.90-30.10m BGL



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#### DRILLHOLE RECORD

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No.	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		MS\BH07
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longye		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 16 of 17



#### Figure MS\BH07.20 MS\BH07 31.60-33.10m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Gro		Exploratory Hole No.							
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart L		Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 17 of 17					

#### Figure MS\BH07.21 MS\BH07 33.10-34.80m BGL



### Figure MS\BH07.22 MS\BH07 34.80-37.30m BGL



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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole	No.						
Client: AECOM	Location: North	MS\BH08							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 1 of 2					

SAMP	LES & TI	ESTS			STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.36 0.36-1.20 0.36 0.36-0.50 0.36 0.50 0.50 0.50	ES1 SL1 <sub>(SS)</sub> J7 <sub>(SL1)</sub> B8 <sub>(SL1)</sub> PID ES2 J9 <sub>(SL1)</sub> B10 <sub>(SL1)</sub> PID	<0.1ppm		8.45		0.30	MADE GROUND (Grass over dark grey fused gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are angular to subangular and include slag. Slag is vesicular (100%)).  MADE GROUND (Grey brown and light grey slightly clayey slightly sandy gravel with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes ash and slag. Slag is vesicular (75-100%)). at c.1.20m BGL dense.	0 0888888
0.50 1.00 1.20-2.70 1.20-1.80 1.20 1.50 1.80 1.80-2.70	PID ES3 PID SL2 <sub>(SS)</sub> J11 <sub>(SL2)</sub> B12 <sub>(SL2)</sub> S PID J13 <sub>(SL2)</sub> B14 <sub>(SL2)</sub> ES4	<0.1ppm <0.1ppm N46 <0.1ppm				(3.90)		
2.00 2.00 2.50 2.70-4.20 2.70 2.70-3.45 2.70 3.00 3.00 3.45 3.45-4.20	PID PID SL3 <sub>(SS)</sub> J15 <sub>(SL3)</sub> B16 <sub>(SL3)</sub> S ES5 PID J17 <sub>(SL3)</sub>	<0.1ppm <0.1ppm N11 <0.1ppm					at c.2.70m BGL medium dense with high cobble content.	
3.50 4.20 4.20-5.70	B18 <sup>(SL3)</sup> PID S SL*	<0.1ppm 50/75mm		4.55		4.20 (1.50) 5.70	(1) MADE GROUND (Brown grey slag fill). at c.4.20m BGL very dense.	
5.70-7.20 5.70 5.70-6.30 5.70 6.00 6.00	SL4 <sub>(SS)</sub> J19 <sub>(SL4)</sub> B20 <sub>(SL4)</sub> S ES6 PID	50/165mm <0.1ppm		2.85		5.90	MADE GROUND (Very dense brown grey slightly sandy gravel with low cobble content. Gravel is fine to coarse angular to subangular and includes ash and vesicular slag. Cobbles include vesicular slag (75-100%)).  MADE GROUND (Brown grey slighty silty sand. Sand is fine to	
6.30 6.30-7.20 6.50	J21 <sub>(SL4)</sub> B22 <sub>(SL4)</sub> PID	<0.1ppm		1.85		6.90	medium).  MADE GROUND (Dark brown slightly organic clayey sand with	
7.20-8.70 7.20 7.20-7.80 7.20 7.20 7.20 7.80	SL5 <sub>(SS)</sub> J23 <sub>(SL5)</sub> B24 <sub>(SL5)</sub> S PID J25 <sub>(SL5)</sub>	N12 <0.1ppm		0.94		7.20 (0.60) 7.80	occasional organic fragments).  MADE GROUND (Medium dense dark grey brown slightly clayey slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes slag, brick, concrete, ash and cinders).	

7.00	J23 <sub>(SL5)</sub>				<b></b>						
Borin	g Progres	s and Wat	er Observa	ations	Liner Sample Information				General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
28/05/2021	0.00	0.00	178		0.36 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 100 0 100 100	Yes Yes Yes No Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.20-5.70m and 11.30-13.30m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed prior to commencing rotary drilling.		
			<del>'                                    </del>					_			

For explanation of symbols and abbreviations see Key Sheets Checked by:  $\mathcal{K}, \mathcal{W}.$ Logged by: G.T/R.C Contract No. All dimensions in metres 4339 Scale 1:50.00

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.								
Client: AECOM		-west of Redcar, North Yo E:457240.665 N:525356.8		MS\BH08					
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 2 of 2					

SAMP	LES & TI	ESTS			STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
7.80-8.50 8.20 8.50	B26 <sub>(SL5)</sub> PID J27 <sub>(SL5)</sub>	0.4ppm		0.24	. — a	(0.70) - - 8.50	Light yellow grey slightly clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes slag, brick, concrete, ash and cinders.  (Tidal Flat Deposits). (continued)	
8.50-8.70 8.70-9.15	B28 <sub>(SL5)</sub> UT1	(24)					Soft to firm black grey slightly organic sandy CLAY. Sand is fine to coarse. (Tidal Flat Deposits).	
9.20 9.25	PID J1	<0.1ppm		-0.51		9.25	at c.8.90m BGL very low strength.	
9.25-10.20 9.25 9.25-9.75 9.75	SL6 <sub>(SS)</sub> J29 <sub>(SL6)</sub> B30 <sub>(SL6)</sub> J31 <sub>(SL6)</sub>			-1.01		9.75 - 9.75 - (0.45)	Dark grey very clayey SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
9.75-10.20 10.20-11.70 10.20	B32 <sub>(SL6)</sub> SL7 <sub>(SS)</sub> J33 <sub>(SL7)</sub>			-1.46		10.20	Dark grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded. (Tidal Flat Deposits).	
10.20-10.95 10.20 10.20	S PID	N4 <0.1ppm				<del>}-</del>   	Very loose and loose dark grey brown very clayey SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
10.95 10.95-11.70 11.20	J35 <sub>(SL7)</sub> B36 <sub>(SL7)</sub> PID	<0.1ppm				- - - - - - -		
11.70-13.20 11.70 11.70-12.45 11.70 12.20	SL8 <sub>(SS)</sub> J37 <sub>(SL8)</sub> B38 <sub>(SL8)</sub> S PID	N12 <0.1ppm				(3.60)	from c.12.20m BGL medium dense.	
12.45 12.45-13.20	J39 <sub>(SL8)</sub> B40 <sub>(SL8)</sub>					- - - - - - - - - - - - - - - - - - -	at c.12.45m BGL slightly silty sand.	
13.20-14.70 13.20 13.20-13.80 13.20 13.20	SL9 <sub>(SS)</sub> J41 <sub>(SL9)</sub> B42 <sub>(SL9)</sub> S PID	N23 <0.1ppm		-5.06		:- :- :- :- :- :- :- :- :- :13.80		
13.80 13.80-14.25	J43 <sub>(SL9)</sub> B44 <sub>(SL9)</sub>				 	· · · · ·	Firm grey brown sandy slightly gravelly CLAY with occasional fragments of shell. Sand is fine to coarse. Gravel is fine subangular to subrounded and includes mudstone.	
14.20 14.25 14.25-14.70	PID J45 <sub>(SL9)</sub> B46 <sub>(SL9)</sub>	<0.1ppm				- - -	(Tidal Flat Deposits).	
14.70-15.15 14.70-15.70 14.70 14.70-15.20	UT2 SL10 <sub>(SS)</sub> J47 <sub>(SL10)</sub> B48 <sub>(SL10)</sub>	(20)				(1.90) - - - -	at c.14.70m BGL very low strength clay of low plasticity.	
15.20 15.20-15.70 15.20	J49 <sub>(SL10)</sub> B50 <sub>(SL10)</sub> PID	<0.1ppm		-6.96	- <u> </u>	15.70	at c.15.20m BGL clay is of intermediate plasticity.	
15.70-15.70	J51			0.50	0	-	at c.15.70m BGL silty clay of intermediate plasticity.  Boring complete at 15.70m BGL - continued by rotary drilling.	

Borin	Boring Progress and Water Observations					iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Rem	arks
28/05/2021 01/06/2021 01/06/2021 02/06/2021 02/06/2021	10.20 10.20 14.70 14.70 15.70	10.20 10.20 14.70 14.70 15.70	178 178 178 178 178 178	5.85 6.00 5.70 7.20 4.90	9.25 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 15.70		100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived fror Vacuum excavation inspec drilling. (3) Inspection pit dt Double installation: 2 No. 5 standpipes installed betwee 11.30-13.30m BGL. (5) UX Client instructions. (6) Aqui to commencing rotary drilling	tion pit attempted prior to ug prior to drilling. (4) 0mm diameter slotted en 1.20-5.70m and O carried out as per the fer protection installed prior
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Checked by: Logged by: G.T/R.C For explanation of symbols and abbreviations see Key Sheets Contract No. All dimensions in metres 4339 Scale 1:50.00

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#### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground	Project: Preliminary Onshore Ground Investigation for NZT									
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883									
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longye	ar DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 1 of 13						

RUN DETAILS					STRATA							
Depth (SCR) (SCR) RQD LL SQUE	Water	Reduced	Legend	Depth (Thickness)	Desc	ription	Instrument/ Backfill					
(Core Ø) RQD RQD	×	Level	Legend	(Thickness)	Discontinuity Detail	Main						
15.70 0 NR		-6.96	× × × × × × × × × × × × × × × × × × ×	15.70 - - (0.60) -	15.70-16.30m no recovery. 15.70m J51 15.70m B52	(1) Organic CLAY/SILT. (Tidal Flat Deposits).						
16.30 87 SOIL		-7.56	X X X X X X X X X X X X X X X X X X X	16.30	16.30-24.80m soil. 16.30m J53 16.50m B54	Very soft to soft grey brown organic sandy CLAY/SILT with roots and rootlets. Sand is fine to coarse. (Tidal Flat Deposits).  16.30m organic slightly sandy clayey silt of very high plasticity with pockets of peat.						
(mm201)		-9.06	* X X X X X X X X X X X X X X X X X X X	(1.50) - - - - - - - - - - - - - - - - - - -								
(102mm)			X X X X X X X X X X X X X X X X X X X		17.80m J55 17.80m B56	Firm to stiff thinly laminated grey brown slightly sandy silty CLAY with silt dustings on laminae. Sand is fine to coarse. (Tidal Flat/Glacial Deposits). 17.80m clay is of intermediate to high plasticity.						
19.30			X X X X X X X X X X X X X X X X X X X	- - - - - - - - - - - - - - - - - - -	19.30m J57 19.50m B58							

Drilling	Drilling Progress and Water Observations				ard Pene	tration Test	Flush			General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	Remarks		
04/06/2021	15.70	15.70	4.11	16.30 19.30	SS	N4 N26	15.70 - 16.30 16.30 - 17.80 17.80 - 19.30 19.30 - 20.50	Water Water Water Water	100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed betw 11.30-13.30m BGL. (5) V	ween 1.20-5.70m and UXO carried out as per the quifer protection installed		
All dimensions in metres  Scale 1:25.00  For explanation of symmatric abbreviations see Key						\ \	ked by:	Logged by: G.T/R.C	Contract No. 4339				

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#### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground	Explorate	ory Hole No.							
Client: AECOM									
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 2	of 13				

RUN	DETA	ILS					STRATA	<u> </u>	- E-
Depth	TCR	ture	Į.	Reduced		Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
(102mm)					X X X X X X X X X X X X X X X X X X X	(4.00) - - - -		Firm to stiff thinly laminated grey brown slightly sandy silty CLAY with silt dustings on laminae. Sand is fine to coarse. (Tidal Flat/Glacial Deposits). (continued)	
20.50	67				X X X X X X X X X X X X X X X X X X X	- - - -	20.35m U59	20.35m very high strength. Clay is of intermediate plasticity.	
(102mm)					X X X X X X X X X X X X X X X X X X X	- - - - - - - - - - -	20.80m J60 20.80m B61	20.80m slightly sandy slightly gravelly clay of intermediate plasticity.	
				-13.06	X X X X X X X X X X X X X X X X X X X	21.80		from 21.50m slightly gravelly. Gravel is fine to medium subangular to subrounded and includes mudstone, sandstone and coal. Stiff red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular and includes sandstone, mudstone, limestone and coal.	
22.30	50					- - - (1.50)	22.30m B62	(Glacial Till).	
(102mm)				4.5-		-			
23.30 (102mm)	100			-14.56		23.30	23.30m U63	23.30m clay is of low plasticity.	

Drilling	g Progress and	Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
				22.30	S	N29	20.50 - 22.30 22.30 - 23.30 23.30 - 23.80	Water Water Water	100 100 100	Vacuum excavation inspection pit attempted to drilling. (3) Inspection pit dug prior to drilling.		
	All dimensions in metres Scale 1:25.00  For explanation of s abbreviations see I					Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339			

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#### **DRILLHOLE RECORD**

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883										
Method (Equipment): Sonic/Rotary C	Coring (Boart Longyear LS250/Boart Longyea	r DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet:	3 of 13					

RUN	I DETA	AILS					STRATA		_ rt/
Depth	TCR	ture	ter	Reduced	1 1	Depth	Desci	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Inst
23.80	100				0	- - (1.50) -	23.75m J64 23.80m J65 23.80m B66	Stiff grey sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes, mudstone, limestone and sandstone. Cobbles are subangular to subrounded and include limestone	
(mmZ01)				-16.06		24.80	24.35m U67	and sandstone. (Probable Weathered Redcar Mudstone Formation). (continued) 24.35m high strength. Clay is of low plasticity.	
(102mm)	100 (48) 0	12		.0.00		- - - -	24.80-25.40m subhorizontal (5-25 degrees) closely spaced smooth planar to undulating open and tight infilled (clay) discontinuities.	Extremely weak thinly laminated light grey MUDSTONE residual. ((Redcar Mudstone Formation).	
25.40	100 (25) 13	NI 26				- - - -(2.00)	25.40-25.70m non-intact.  25.70-26.80m subhorizontal (5-25 degrees) to vertical (85-90 degrees) very closely spaced planar to undulating smooth open and tight infilled (clay)		
(102mm)		NI 18				- - - -	discontinuities.  26.20-26.40m non-intact.  26.40-26.80m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely to medium spaced		
26.90	100 (69) 0	15		-18.06		26.80	smooth planer and undulating open and tight infilled (clay) discontinuities.  26.80-29.90m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) very closely spaced smooth planer and undulating open and tight infilled (clay) discontinuities.	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). 26.90-28.40m driller notes loss of flush to 0% returns.	
.102mm)									

Drilling	g Progress and	l Water Obser	vations	Stand	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Wate Standi		Туре	Result	From - To	Туре	Returns (%)			
04/06/2021 07/06/2021	25.40 25.40	25.40 25.40	3.11 0.96	11			23.80 - 24.80 24.80 - 25.40 25.40 - 26.90 26.90 - 28.40	0 - 25.40 Water 100 0 - 26.90 Water 100		Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed betw 11.30-13.30m BGL. (5) V	veen 1.20-5.70m and JXO carried out as per the quifer protection installed	
All dimensions in metres Scale 1:25.00 For explanation of abbreviations see					Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339				

Status:-

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	lliminary Onshore Ground Investigation for NZT	

Client:

**AECOM** 

**FINAL** Exploratory Hole No. Location: North-west of Redcar, North Yorkshire MS\BH08 E:457240.665 N:525356.883
| Ground Level (m): | S.745 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) Start Date: 28/05/2021 4 of 13

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_	DETA				ı			STRATA				ent/
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced	Legend	Depth (Thickness)		Descr	ription			Instrument/ Backfill
(Core Ø)	RQD	Frac	W	Level	Legend	(Thickness)	Discontinuity D	Detail		Mair		l ns
28.40 (mm201)	100 (88) 0			-21.16		(3.10)			28.40-2 flush to	9.90m drill 50% returns.		
						- - - - - - - - - - - -			Termina sinking	ated at 29.90r casing and ja	m BGL - due to mmed tools.	

Drilling	Progress and	d Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
07/06/2021 08/06/2021 08/06/2021	28.40 28.40 29.90	28.40 28.40 29.90	0.96 0.00 0.00				28.40 - 29.90	Water 50		Vacuum excavation insp to drilling. (3) Inspection Double installation: 2 No standpipes installed beto 11.30-13.30m BGL. (5)	JXO carried out as per the quifer protection installed	
	All dimensions in metres Scale 1:25.00					tion of syr ns see Ke	mbols and by Sheets	Chec	ked by:	Logged by: G.T/R.C	Contract No. 4339	

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ject: Preliminary Onshore Ground Investigation for NZT									
Client:	ient:  AECOM  Location:  North-west of Redcar, North Yorkshire  E:457240.665 N:525356.883									
Method (Equipment): Sonic/Rotary Cori	ng (Boart Longyear LS250/Boart Longyea		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 5 of 13					



### Figure MS\BH08.2 MS\BH08 1.20-2.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

	l l									
Project: Preliminary Onshore Ground I	Exploratory Hole No.									
Client: AECOM										
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 6 of 13						

## Figure MS\BH08.3 MS\BH08 2.70-4.20m BGL



### Figure MS\BH08.4 MS\BH08 5.70-7.20m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ect: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yourself -west of Redcard -we	MS\BH08		
Method (Equipment Sonic/Rotary	e): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 7 of 13	

## Figure MS\BH08.5 MS\BH08 7.20-8.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH08 Sample: 7.20-8.70m BGL

## Figure MS\BH08.6 MS\BH08 9.25-10.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH08 Sample: 9.25-10.20m BGL

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.			
Client: AECOM		-west of Redcar, North Yor ::457240.665 N:525356.88	MS\BH08	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 8 of 13



## Figure MS\BH08.8 MS\BH08 11.70-13.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH08 Sample: 11.70-13.20m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yor ::457240.665 N:525356.88	MS\BH08		
Method (Equipment): Sonic/Rotary C	oring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 9 of 13	

### Figure MS\BH08.9 MS\BH08 13.20-14.70m BGL



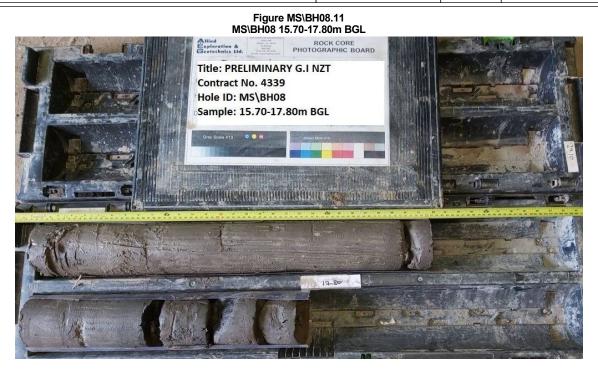
### Figure MS\BH08.10 MS\BH08 14.70-15.70m BGL



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#### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457240.665 N:525356.88	MS\BH08	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 10 of 13





## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 999

#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yo ::457240.665 N:525356.88	MS\BH08		
Method (Equipment): Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 11 of 13	

### Figure MS\BH08.13 MS\BH08 20.80-23.80m BGL



### Figure MS\BH08.14 MS\BH08 23.80-25.40m BGL



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#### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Grou	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yo ::457240.665 N:525356.88	MS\BH08	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Long	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 12 of 13



#### Figure MS\BH08.16 MS\BH08 26.90-28.40m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor ::457240.665 N:525356.88	MS\BH08	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 13 of 13



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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870				MS\BH09
Method (Equiprosonic/Ro	ment): tary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet:	1 of 2

SAMPLES & TESTS				STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
0.20 0.30 0.30 0.50 0.50 0.75-1.20 1.00	J1 ES2 PID ES3 PID SL1 <sub>(SS)</sub> B5 <sub>(SL1)</sub> ES4 PID	<0.1ppm <0.1ppm		7.42/		(1.30)	MADE GROUND (Macadam).  MADE GROUND (Grey black slightly saturated sand and gravel. Sand includes ash. Gravel is fine to coarse angular to subangular and includes slag and clinker. Slag is vesicular (50-75%)).	0.88888888888888	
1.00 1.20-2.70 1.20 1.35-1.95 1.50	SL2 <sub>(SS)</sub> S B6 <sub>(SL2)</sub> J7 <sub>(SL2)</sub> PID	N8 <0.1ppm		5.52		(0.60)	MADE GROUND (Loose black yellow slightly sandy gravel with low cobble content. Gravel is fine to coarse angular to subrounded and includes compacted ash and clinker).		
1.95-2.70 2.00-2.30 2.00	B9 <sub>(SL2)</sub> ES8 <sub>(SL2)</sub> PID	<0.1ppm					MADE GROUND (Black orange yellow slightly clayey sandy gravel with medium cobble content. Gravel is fine to coarse angular to subrounded and includes slag, clinker, compacted ash and brick. Slag is vesicular (25-50%). Cobbles are subangular		
2.70-4.20 2.70 3.00-3.20 3.00	SL3 <sub>(SS)</sub> S ES10 <sub>(SL3)</sub>	N4				- -	and include yellow compacted ash).' (Engineer notes locally saturated). at c.2.70m BGL loose and very loose.		
3.00 3.00 3.20-4.00 3.50	J11 <sub>(SL3)</sub> PID B12 <sub>(SL3)</sub> PID	<0.1ppm <0.1ppm				(2.70)			
4.00-4.20 4.00 4.00 4.20-5.70 4.20-4.65	ES13 <sub>(SL3)</sub> J14 <sub>(SL3)</sub> PID SL4 <sub>(SS)</sub> B15 <sub>(SL4)</sub> S	<0.1ppm		2.82		4.65	at c.4.20m BGL medium dense.		
4.20 4.50 4.65-4.85 4.65 4.85-5.70 5.00	S J16 <sub>(SL4)</sub> ES17 <sub>(SL4)</sub> PID B18 <sub>(SL4)</sub> J19 <sub>(SL4)</sub>	N12 <0.1ppm				-  -  -  -  -  -  -	Medium dense to dense yellow brown slightly gravelly SAND with occasional fragments of shell. Gravel is fine to coarse angular and includes mudstone and sandstone. (Tidal Flat Deposits).		
5.50 5.50 5.70-7.20 5.70-6.45 5.70 6.00	J20 <sub>(SL4)</sub> PID SL5 <sub>(SS)</sub> B21 <sub>(SL5)</sub> S J22 <sub>(SL5)</sub>	<0.1ppm N15			· · · · · · · · · · · · · · · · · · ·	-  -  -  -  -  -  -  -  -			
6.45-7.20 6.50 6.50	B23 <sub>(SL5)</sub> J24 <sub>(SL5)</sub> PID	<0.1ppm				- - - - - -			
7.00 7.20-8.70 7.20 7.50 7.50	J25 <sub>(SL5)</sub> SL6 <sub>(SS)</sub> S J27 <sub>(SL6)</sub> PID	50/285mm <0.1ppm					at c.7.20m BGL very dense.		
					0	<u> </u>			

Boring Progress and Water Observations Liner Sample Information	General
Date Depth Casing Casing Dia (mm) Casing Dia (mm) Standing From - To Internal Dia (mm) Recovery (%) Subsampled	Remarks
05/07/2021 0.00 0.00 178 0.75 - 1.20 178 100 Yes (1) Description del Inspection pit dug installation: 2 No. 3 (2.70 - 4.20 178 100 Yes (4.20 - 5.70 178 100 Yes (4.20 - 6.70 178 100 Yes (4.20 - 6.70 178 100 Yes Aquifer protection pit of the commencial protection of the commenci	rived from drillers daily report. (2) prior to drilling. (3) Double 50mm diameter slotted standpipes 1.70-4.50m and 5.70-8.70m BGL. ut as per the Client instructions. (5) installed between 15.15-13.70m ing rotary drilling. (6) High Pressure g carried out. Refer to Appendix III

Logged by: M.B/R.C Checked by: For explanation of symbols and abbreviations see Key Sheets Contract No. All dimensions in metres K.W. 4339 Scale 1:50.00

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R

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#### **SONIC SAMPLE HOLE RECORD**

Status:- FINAL

	L						
Project:	et: Preliminary Onshore Ground Investigation for NZT						
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870				MS\BH09	
Method (Equipment): Sonic/Rotary Co	oring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet:	2 of 2	

SAMPL	LES & T	ESTS					STRATA	= ut/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
7.95-8.45 7.95-8.45 8.00	B26 <sub>(SL6)</sub> B28 <sub>(SL6)</sub> J29 <sub>(SL6)</sub>				· · · · · · · · · · · · · · · · · · ·	-	Medium dense to dense yellow brown slightly gravelly SAND with occasional fragments of shell. Gravel is fine to coarse angular and includes mudstone and sandstone.	0000
8.50 8.50 8.70-10.20 8.70-9.45 8.70 9.00	J30 <sub>(SL6)</sub> PID SL7 <sub>(SS)</sub> B31 <sub>(SL7)</sub> S J32 <sub>(SL7)</sub>	<0.1ppm N37			00	- - - - <del>(8</del> .75) - -	(Tidal Flat Deposits). (continued) at c.8.70m BGL dense.	
9.45-10.20 9.50 9.50	B33 <sub>(SL7)</sub> J34 <sub>(SL7)</sub> PID	<0.1ppm				- - - -	between c.9.60-13.40m BGL with frequent shell fragments.	
10.00 10.20-11.70 10.20-10.95 10.20 10.50 10.50	J35 <sub>(SL7)</sub> SL8 <sub>(SS)</sub> B36 <sub>(SL8)</sub> S J37 <sub>(SL8)</sub> PID	50/295mm <0.1ppm			0		at c.10.20m BGL very dense.	
10.95-11.70 11.00	B38 <sub>(SL8)</sub> J39 <sub>(SL8)</sub>	-0. гррпп				- - - -	between c.10.80-13.40m BGL gravelly sand.	
11.50 11.50 11.70-13.20 11.70-13.00 11.70 12.00	J40 <sub>(SL8)</sub> PID SL9 <sub>(SS)</sub> B41 <sub>(SL9)</sub> S J42 <sub>(SL9)</sub>	<0.1ppm N48				-	at c.11.70m BGL dense.	
12.50 12.50	J43 <sub>(SL9)</sub> PID	<0.1ppm				- - - - -		
14.00 14.00 14.00-14.20	ES44 <sub>(SL9)</sub> J45 <sub>(SL9)</sub> PID SL10 <sub>(SS)</sub> S B46 <sub>(SL10)</sub> J47 <sub>(SL10)</sub> ES48 <sub>(SL10)</sub> S(M)49 <sub>(SL</sub> PID J50 <sub>(SL10)</sub> ES51 <sub>(SL10)</sub> ES51 <sub>(SL10)</sub> ES53 <sub>(SL10)</sub> J54 <sub>(SL10)</sub> S	<0. гррпп		-5.93 -6.33		(0.40) - 13.80 - (0.90) - 14.70	Firm to stiff thinly laminated grey brown slightly sandy slightly gravelly CLAY. Mild organic odour. Gravel is fine to medium subangular to subrounded and includes mudstone and limestone.  (Tidal Flat/Glacial Deposits). at c.13.50m clay is of intermediate plasticity.  Stiff red brown sandy gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone.  (Glacial Till). at c.14.00m BGL clay is of intermediate plasticity.  Boring complete at 14.70m BGL - continued by rotary drilling.	
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06/07/2021 13.20 13.20 178 5.90 10.20 - 11.70 178 100 Yes Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipe installed between 1.70-4.50m and 5.70-8.70m BGL (4) UXO carried out as per the Client instructions. (4) Aquifer protection installed between 15.13.20 installed between 15.13.70m prior to commencing rotation (6) High Pressult.	Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General		
06/07/2021 13.20 13.20 178 5.90 10.20 - 11.70 178 100 Yes Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipe installation: 2	Date	Depth	Casing			From - To			Subsampled	Remarks	
	06/07/2021	13.20	13.20	178	-	10.20 - 11.70 11.70 - 13.20	178 178	100 100	Yes Yes	installation: 2 No 50mm diameter slotted standpipes installed between 1.70-4.50m and 5.70-8.70m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 15.15-13.70m prior to commencing rotary drilling. (6) High Pressure Dilatometer testing carried out. Refer to Appendix III	

All dimensions in metres
Scale 1:50.00

For explanation of symbols and abbreviations see Key Sheets

Checked by:
Logged by:
M.B/R.C

4339

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#### **DRILLHOLE RECORD**

Project:	Preliminary Onshore Ground	Investigation	for NZT		Expl	oratory Hole No.
Client:	AECOM		-west of Redcar, North Yor E:456823.949 N:525534.87			MS\BH09
Method (Equipment): Sonic/Rotary Coring	g (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet:	1 of 18

RUN	DETA	AILS					STRATA		ıt/				
Depth	Depth TCR				luced Depth Description								
& Core Ø)	TCR (SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	Instrument/				
5.15		RO		-7.24 -7.68		14.70 (0.45) – 15.15	14.70-15.15m rotary openhole drilling.	Stiff red brown sandy gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone. (Glacial Till).					
05.50 (102mm)	63	SOIL				-	15.15m B56 15.15-20.00m soil. 15.20m J55	Stiff dark red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes coal, mudstone, sandstone and limestone.  (Glacial Till).					
					-	- - - - - - -	15.70m U57	15.20m clay is of intermediate plasticity. 15.70m high strength. Clay is of intermediate plasticity.					
(102mm)						- - - - - - - - - - - - - - -							
7.00	100					- - - - - - - - - - - - - - - - - - -	16.90m J58 17.00m B60 17.10m J59						
(102mm)						- - - - - - - - - - -	18.00m J61 18.00m B62	18.00m clay is of intermediate plasticity.					
3.50	37			-11.03	× ×	18.50	18.50m B64		-\///				
					<del>-</del>	-	18.60m J63	18.60m clay is of high plasticity.					

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
07/07/2021	14.70	14.70	3.11				14.70 - 15.15 15.15 - 15.50 15.50 - 17.00 17.00 - 18.50 18.50 - 20.00	Water Water Water Water Water	100 100 100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.50m and 5.70-8.70m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 15.15-13.70m prior to commencing rotary drilling. (6) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.		
All dimensions in metres Scale 1:25.00						tion of syr ns see Ke	nbols and y Sheets	Chec	ked by:	Logged by: M.B/R.C	Contract No. 4339	

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

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#### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.				
Client: AECOM								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 2 of 18				

PIIN	I DETA	JI S		Ι			STRATA				Ι .
Depth	TCR		_			_		ription			Instrument/ Backfill
& (Core Ø)	(SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)			Main		Instru
(102mm)		4		-11.53		(0.50) - - - - - - - - - - (1.00)	19.00m ES65 19.00m ES(M)66	slightly sa coarse. (Glacial E Stiff dark slightly gr coarse. G angular to	r laminated andy CLAY. Deposits). (content of the content of the c	dark brown silty Sand is fine to continued) Slightly sandy Y. Sand is fine to to coarse ar and includes	
(mm 201)	100 (0) 0	NI		-12.53 -13.53		20.00	20.00m ES67 20.00-23.40m non-intact.	grey MUÉ weathere (Recover (Redcar N	OSTONE dis d. ed as very s Mudstone F	etiff gravelly clay). ormation).	
21.50 (mw201)	70 (12) 0 46 (12) 0							MUDSTC	k thinly lam NE partially Mudstone F	inated dark grey	
	(54) 0					-					

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks  (1) Description derived from drillers daily report. (2 Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.50m and 5.70-8.70m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 15.15-13.70m prior to commencing rotar drilling. (6) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
07/07/2021 08/07/2021	20.00 20.00	20.00 20.00	0.00 4.16				20.00 - 21.00 21.00 - 21.50 21.50 - 22.50 22.50 - 23.30	Water Water Water Water	100 100 100 100			
All din	For ex	For explanation of symbols and				ked by:	Logged by:	Contract No.				

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: M.B/R.C 4339

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Project:

# DRILLHOLE RECORD FINAL Preliminary Onshore Ground Investigation for NZT [Location:

| Client: AECOM | North-west of Redcar, North Yorkshire | E:456823.949 N:525534.870 | Start Date: | O5/07/2021 | O5/07/202

DUA			<u> </u>				CTDATA		
	I DETA		-				STRATA		Instrument/ Backfill
Depth &	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		ription	Strur Back
(Core Ø)	`RQD′	F 드	>	Level	Ŭ	(Trickness)	Discontinuity Detail	Main	
(mm201)						-		Very weak thinly laminate MUDSTONE partially we (Redcar Mudstone Form (continued)	athered.
	100 (70) 0			-15.93		23.40			
(102mm)	o o	16				- - - - -	23.40-26.30m subhorizontal (5-25 degrees) closely spaced planar smooth tight clean and infilled (clay) discontinuities.	Weak thinly laminated da MUDSTONE partially we (Redcar Mudstone Form	athered.
24.40 <u>E</u>	100					- -			
24.50 (2.4.50)	100 (100) 0 100 (100) 93					- - - -			
(102mm)						- - (3.90) - - -			
25.90 (mm 201)	100 (100) 0					- - -			
26.30	100 (64) 22	NI	-			- -	26.30-26.50m non-intact.		
	22	12				-	26.50-27.00m subhorizontal (5-30 degrees) closely spaced planar smooth to rough tight stained (grey silt) discontinuities.		

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
08/07/2021 09/07/2021	24.50 24.50	24.50 24.50	0.00 2.16				23.30 - 24.40 24.40 - 24.50 24.50 - 25.90 25.90 - 26.30 26.30 - 27.50	Water Water Water Water Water	100 100 100 100 100	Inspection pit dug prior t installation: 2 No. 50mm standpipes installed bet 5.70-8.70m BGL. (4) UX Client instructions. (5) A	diameter slotted ween 1.70-4.50m and (O carried out as per the quifer protection installed prior to commencing rotary e Dilatometer testing
All din	All dimensions in metres			For e	xplana	tion of svi	mbols and	Chec	ked by:	Logged by:	Contract No.

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: Contract No. 4339

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

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#### DRILLHOLE RECORD

Status:- FINAL

Project: Preliminary Onshore Ground I	Investigation	for NZT		Exploratory Hole	No.				
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl	EO 205)	Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 4 of 18					

RUN	RUN DETAILS						STRATA	· · · · · · · · · · · · · · · · · · ·	nut/
Depth	TCR	ture	Water	Reduced	Lamand	Depth	Desci	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Wa	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst
(102mm)		8		-19.83		- - - - 27.30	27.00-29.00m subhorizontal to oblique (5-45 degrees) closely spaced planar to undulating smooth to rough tight to partly open stained (grey silt) discontinuities.	Weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
27.50 (ww.Z01)	100 (83) 77			-21.53		- - - - - - - - - - - - - - - - - - -		Medium strong thinly bedded grey light grey arenaceous MUDSTONE unweathered. (Redcar Mudstone Formation).	
(102mm)	100 (79) 73	6		-23.18		- - - - - - - - - - - - - - - - - - -	29.00-30.65m subhorizontal (5-30 degrees) closely spaced undulating rough very tight to tight infilled (grey clayey sand and gravel) discontinuities.	Extremely weak thinly bedded grey light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	

Drilling	Drilling Progress and Water Observations				ard Pene	tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
09/07/2021 12/07/2021	29.00 29.00	29.00 29.00	0.00 4.11				27.50 - 29.00 29.00 - 30.50 30.50 - 32.00	Water Water Water	100 100 100	(1) Description derived from drillers daily report Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.50m and 5.70-8.70m BGL. (4) UXO carried out as per th Client instructions. (5) Aquifer protection install between 15.15-13.70m prior to commencing rodrilling. (6) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.	
All din	All dimensions in metres			For ex	For explanation of symbols and				ked by:	Logged by:	Contract No.

All dimensions in metres Scale 1:25.00 For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: M.B/R.C 4339

Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL

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Client:

#### Status:-**DRILLHOLE RECORD FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\BH09 **AECOM** E:456823.949 N:525534.870 | Ground Level (m): | 7.466 Start Date: 05/07/2021 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) 5 of 18

Controlled y Controlled Education (Education Controlled								0 01 10				
RUN	DETA							STRATA				ent/
Depth &	TCR (SCR) RQD	Fracture Index	Water	Reduced	Legend	Depth		Descr	iption			Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Legenu	(Thickness)	Discontinuity [	Detail		Mair	1	l si
(102mm)		10				- - - - - -	30.65-31.20m non-intact.  31.20-33.30m subhorizontal t degrees) closely spaced undula partly open infilled (clayey sand discontinuities.	o oblique (5-60 ting rough to striated and gravel)	as sand Very we grey MU to destr	ly gravel). eak thinly bed JDSTONE di uctured. r Mudstone F	dual (recovered ded grey dark stinctly weathered ormation).	
32.00 (nm201)	100 (57) 39					- - - (2.85) - - - -						
33.50 (102mm)	100 (52) 31	NI NI		-26.03		33.50	33.30-34.50m non-intact.		Weak to dark gre partially (Redcar	o medium str ey arenaceou weathered to r Mudstone F	ong thinly bedded s MUDSTONE o destructured. ormation).	
(1)		14				- (2.10) -	34.50-35.60m subhorizontal ( spaced planar to undulating smo and infilled (clayey sand and gra	5-30 degrees) closely poth to rough stained livel) discontinuities.				

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To Type Returns (%)			Remarks	
							32.00 - 33.50 33.50 - 35.00	Water Water	100 100	(1) Description derived from drillers daily repoles inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.70-4.50m and 5.70-8.70m BGL. (4) UXO carried out as per Client instructions. (5) Aquifer protection instabetween 15.15-13.70m prior to commencing Indilling. (6) High Pressure Dilatometer testing carried out. Refer to Appendix III for results.	
	All dimensions in metres Scale 1:25.00			For e	xplana eviatio	tion of syr ns see Ke	ibolo aria		ked by:	Logged by: M.B/R.C	Contract No. 4339

<u> </u>	Regional Office:	Unit 20 Business Development Centre, E	Eanam Wharf, Blackbu	um, BB1 5BL Tel: 01	772 735 300 <b>Fax:</b> 01772 73	35 999
<b>E</b> <b>G</b>		DRIL	LHOLE I	RECORD		Status:- FINAL
Project:	Prel	iminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client:	AECOM			-west of Redcar, North E:456823.949 N:525534		MS\BH09
Method (Equipment): Sonic/Rotary Coring	(Boart Long	year LS250/Comacchio G		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 6 of 18

	UN DETAILS										
								STRATA			Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Descr			strun
(Core Ø)	`RQD'	Fra	8	Level	J	(Inickness)	Discontinuity [	Detail	Main		Ë
35.00 (102mm)	100 (60) 20					-			Weak to medium stro dark grey arenaceous partially weathered to (Redcar Mudstone Fo (continued)	ong thinly bedded is MUDSTONE o destructured. ormation).	
				-28.13		35.60					
									Complete at 35.60m b	3GL.	

Drilling	Progress and	l Water Obser	vations	Standard Penetration Test				Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
12/07/2021	35.60	35.60	0.00				35.00 - 35.60	Water	100	Inspection pit dug prior to installation: 2 No. 50mm standpipes installed betw 5.70-8.70m BGL. (4) UX Client instructions. (5) Ad	diameter slotted ween 1.70-4.50m and O carried out as per the quifer protection installed prior to commencing rotary e Dilatometer testing	
	All dimensions in metres Scale 1:25.00			For explanation of symbols abbreviations see Key					ked by:	Logged by: M.B/R.C	Contract No. 4339	

Print Date and Time: 29/11/2021 14:49:47

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground		Exploratory Hole No.				
Client:	AECOM Location:  North-west of Redcar, North Yorkshire  E:456823.949 N:525534.870						
Method (Equipment) Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 7 of 18		

### Figure MS\BH09.1 MS\BH09 0.75-1.20m BGL



### Figure MS\BH09.2 MS\BH09 1.20-2.70m BGL



#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 8 of 18		

### Figure MS\BH09.3 MS\BH09 2.70-4.20m BGL



### Figure MS\BH09.4 MS\BH09 4.20-5.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 9 of 18		

### Figure MS\BH09.5 MS\BH09 5.70-7.20m BGL



#### Figure MS\BH09.6 MS\BH09 7.20-8.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 10 of 18		

## Figure MS\BH09.7 MS\BH09 8.70-10.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH09 Sample: 8.70-10.20m BGL e"a..g"a..g"a..g"a..<mark>g"a..g</mark>"a..g"a

## Figure MS\BH09.8 MS\BH09 10.20-11.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH09 Sample: 10.20-11.70m BGL

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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 11 of 18		

### Figure MS\BH09.9 MS\BH09 11.70-13.20m BGL



### Figure MS\BH09.10 MS\BH09 13.20-14.70m BGL



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Tel: 0191 387 4700 Fax: 0191 387 4710

#### **DRILLHOLE RECORD**

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Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 12 of 18		



#### Figure MS\BH09.12 MS\BH09 17.00-18.50m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT					Exploratory Hole No.
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 13 of 18	

### Figure MS\BH09.13 MS\BH09 18.50-21.00m BGL



### Figure MS\BH09.14 MS\BH09 21.00-23.30m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT					Exploratory Hole No.
Client:	AECOM		-west of Redcar, North You E:456823.949 N:525534.87	MS\BH09	
		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 14 of 18	



### Figure MS\BH09.16 MS\BH09 24.50-26.30m BGL



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#### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 15 of 18		



#### Figure MS\BH09.18 MS\BH09 27.50-29.00m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location:   North-west of Redcar, North Yorkshire   E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 16 of 18		



### Figure MS\BH09.20 MS\BH09 30.50-32.00m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	roject: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870			MS\BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 17 of 18		

## Figure MS\BH09.21 MS\BH09 32.00-33.50m BGL Allied ROCK CORE Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH09 Sample: 32.00-33.50m BGL

### Figure MS\BH09.22 MS\BH09 33.50-35.00m BGL



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**AECOM** 

Project:

Client:

#### **DRILLHOLE RECORD FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\BH09 E:456823.949 N:525534.870 | Ground Level (m): | 7.466 Start Date: 05/07/2021 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)



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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Explora	tory Hole No.						
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457026,135 N:525257,651							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	r DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet:	1 of 2			

SAMPLES & TESTS							STRATA	ent/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.00-0.05 0.00	ES PID	<0.1ppm		7.45/ 7.26		0.05/ - 0.24	MADE GROUND (Grass over soft dark brown clayey topsoil).  MADE GROUND (Dark grey fused gravel with medium cobble	
0.30 0.30 0.45-1.20 0.50	ES1 PID SL1 ES2	<0.1ppm				- - -	content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are angular and include slag. Slag is vesicular (100%)).	
0.50	PID	<0.1ppm					MADE GROUND (Dark grey very sandy gravel with medium	
1.00 1.00 1.20-2.70	ES3 PID SL2	<0.1ppm				-	cobble content. Gravel is fine to coarse angular to subangular and includes slag and vesicular slag. Cobbles are angular vesicular slag (100%)).	
1.20 1.50	C PID	50/15mm <0.1ppm				- - - -	from c.0.60m BGL grey. at c.1.20m BGL very dense. from c.1.20-2.70m BGL light grey with fragments of metal (20-100mm in size).	
2.00 2.00	ES4 PID	<0.1ppm				- - - -(4.36)	(==	
2.50	PID	<0.1ppm			XXX			
2.70-4.20 2.70 2.70-3.45 2.70	SL3 <sub>(SS)</sub> J8 <sub>(SL3)</sub> B9 <sub>(SL3)</sub> C	50//150mm				- - - -	at c.2.70m BGL very dense.	
3.00 3.00 3.45 3.45-4.20	ES5 PID J10 <sub>(SL3)</sub> B11 <sub>(SL3)</sub> PID	<0.1ppm				- - - -		
3.50	PID "	<0.1ppm			>>>>	-		
4.00 4.00 4.20-5.70 4.20	ES6 PID SL4 <sub>(SS)</sub> J12 <sub>(SL4)</sub>	<0.1ppm		2.90		4.60	at c.4.20m BGL very dense.	
4.20-4.60 4.20 4.50 4.60 4.60-5.70 5.00	B13 <sub>(SL4)</sub> C PID J14 <sub>(SL4)</sub> B15 <sub>(SL4)</sub> ES7	50/175mm <0.1ppm		2.90	XXXXX XO	4.80 - - - - (1.10)	Brown grey slightly silty gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, limestone and mudstone. (Tidal Flat Deposits).	
5.00	PID	<0.1ppm			· . · .× . ·			
5.50 5.70-7.20	PID SL5 <sub>(SS)</sub>	<0.1ppm		1.80	×0	5.70	Very dense dark brown grey slightly silty slightly gravelly SAND	
5.70 5.70-7.20 5.70	J16 <sub>(SL5)</sub> B17 <sub>(SL5)</sub> S	N57				- - - - -	with occasional shell fragments. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes sandstone, limestone, mudstone and coal. (Tidal Flat Deposits).	
6.50	PID	<0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - (2.25) -		
7.20-8.70 7.20 7.20-7.95 7.20 7.50	SL6 <sub>(SS)</sub> J18 <sub>(SL6)</sub> B19 <sub>(SL6)</sub> S	N37 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - -	from c.7.20m dense.	
7.30	FID	v. ippili		-0.45	×	- 7.95		

L					• •						
Boring	Progress	s and Wat	er Observa	itions	Liner Sample Information				General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
07/06/2021 07/06/2021 08/06/2021 08/06/2021 14/06/2021	0.00 2.70 2.70 4.20 4.20	0.00 2.70 2.70 4.20 4.20	178 178 178 178 178	Dry Dry Dry Dry	0.45 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 100 100 100 100	No No Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) 4 No. vibrating piezometers installed at 4.30m, 8.00m, 16.00m and 32.00m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 12.15-10.15m prior to commencing rotary drilling.		

Checked by: Logged by: G.T/R.C/D.P Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Status:-

Project: Preliminary Onshore Ground	Exploratory Hole No.							
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	r DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 2 of 2				

SAMPLES & TESTS							STRATA	ent/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
7.95 7.95-8.70 8.50 8.70-10.20 8.70 8.70-9.45 8.70	J20 <sub>(SL6)</sub> B21 <sub>(SL6)</sub> PID SL7 <sub>(SS)</sub> J22 <sub>(SL7)</sub> B23 <sub>(SL7)</sub> S	<0.1ppm N43			x0	(1.50)	Brown grey silty slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, limestone, mudstone and coal. (Tidal Flat Deposits). (continued) at c.8.70m BGL dense.	
9.45 9.45-10.20 9.50	J24 <sub>(SL7)</sub> B25 <sub>(SL7)</sub> PID	<0.1ppm		-1.95 -2.70	× × × × × × × × × × × × × × × × × × ×	9.45 	Soft dark brown grey slightly organic slightly sandy slightly gravelly CLAY/SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes mudstone, limestone and sandstone. (Tidal Flat Deposits).	
10.20-11.70 10.20 10.20-11.30 10.20 10.50	SL8 <sub>(SS)</sub> J26 <sub>(SL8)</sub> B27 <sub>(SL8)</sub> S PID	N53 <0.1ppm		-3.80	× · · · · · · · · · · · · · · · · · · ·	 - - - - - - - - - - - - - - - - - -	at c.9.45m BGL clay/silt is of low plasticity.  Very dense brown grey silty slightly gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone.  (Tidal Flat Deposits).	
11.30 11.30 11.30 11.70-12.15 11.70-12.15	J28 <sub>(SL8)</sub> ES29 <sub>(SL8)</sub> PID UT1 <sub>(SS)</sub> U30 <sub>(UT1)</sub>	<0.1ppm		-3.80	- · · · · · · · · · · · · · · · · · · ·	- (0.85) - 12.15	Soft light brown grey slightly organic slightly sandy slightly gravelly CLAY with occasional sand pockets. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes sandstone, limestone and mudstone. (Tidal Flat Deposits). at c.11.70m BGL clay is of intermediate plasticity.	
							Boring complete at 12.15m BGL - continued by rotary drilling.	

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	Informatio	n	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
14/06/2021	12.15	11.70	178	5.80	8.70 - 10.20 10.20 - 11.70 11.70 - 12.15	178 178 116	100 100 78	Yes No No	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dup prior to drilling. (4) 4 No. vibrating piezometers installed at 4.30m, 8.00m, 16.00m and 32.00m BGL. (5) UXO carried out as per the Client instructions. (6) Aquifer protection installed between 12.15-10.15m prior to commencing rotary drilling.	

Checked by: K,W. Logged by: G.T/R.C/D.P Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Explor	atory Hole No.					
Client: AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet:	1 of 16		

RUN	I DETA	AILS					STRATA		ant/
Depth &	TCR (SCR)	Fracture	Water	Reduced	Legend	Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Frac	×	Level	Legend	(Thickness)	Discontinuity Detail	Main	<u>s</u>
12.60		RO		-4.65 -5.10		- 12.15 - _(0.45) - 12.60	12.15-12.60m rotary openhole drilling.	(1) Laminated brown grey CLAY with sand lenses. (Driller describes as 'firm'). (Tidal Flat Deposits).	
(102mm)	100	SOIL		50		-	12.60-20.00m soil. 12.60m J31 12.60m B32	Firm brown grey organic slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes coal, limestone, mudstone and sandstone. (Tidal Flat Deposits).  12.60m slightly sandy clay of intermediate plasticity.	
13.60	100					-(2.00) - - - -	13.60m J33 13.60m B34	13.60m clay is of high plasticity.	
(102mm)				-7.10		- - - - 14.60	14.10m J35 14.10m B36	14.10m clay is of high plasticity with rare peat pockets.	
15.10						-	14.60m J37	Stiff brown grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes coal, limestone, mudstone and sandstone. (Glacial Till).	
	100				- 0	-	15.10m U38	15.10m clay is of high plasticity.	
(102mm)						-	15.60m J39 15.60m B40		

Drilling Progress and Water Observations					ard Pene	tration Test		Flush			General	
Date	Depth	Casing	Water Standing	Depth Type Result From - To Type Returns (%)				Rer	marks			
15/06/2021	12.15	12.15	0.00	13.60 - 15.10   Water   100   Vacuum excav to drilling. (3) l   15.10 - 16.60   Water   100   4 No. vibrating   8.00m, 16.00n out as per the protection inst				Vacuum excavation insp to drilling. (3) Inspection 4 No. vibrating piezomet 8.00m, 16.00m and 32.0 out as per the Client inst	Om BGL. (5) UXO carried ructions. (6) Aquifer een 12.15-10.15m prior to			
All dimensions in metres Scale 1:25.00  For explanation of symaboreviations see Key								Chec	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339	

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Expl	oratory Hole No.
Client:	AECOM		-west of Redcar, North You -:457026.135 N:525257.65			MS\BH10
Method (Equipment Sonic/Rotary	t): Coring (Boart Longyear LS250/Boart Longyea	ar DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet:	2 of 16

RUN	DETA	AILS					STRATA		l alt
Depth	TCR (SCR) RQD	Fracture	Water	Reduced	Legend	Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	RQD	Frac	×	Level	Legenu	(Thickness)	Discontinuity Detail	Main	l su
16.60	100					-	16.60m ES41 16.60m J42 16.60m B43	Stiff brown grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes coal, limestone, mudstone and sandstone. (Glacial Till). (continued)	
(102mm)						(4.90) - - - -	17.25m U44 17.50m B45	17.25m very high strength. Clay is of intermediate plasticity.	
18.10	82					- - - - - - - - - -			
(102mm)						- - - - - - - - - - - - - - - - - - -			
19.50 ໂພ	0			-12.00 -12.20		19.50 (0.20) 19.70		(1) Laminated brown grey CLAY with sand lenses. (Driller describes as 'firm').	
(102mm)	0 (0)	NR				- - -	20.00-21.40m no recovery.	\(\(\begin{align*} \(\begin{align*} \left(\Gamma\) (1) Grey MUDSTONE. (Driller describes as 'weak' recovered as angular hard pieces).	

Drillin	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)		marks
				16.60 19.50	SS	N12 N46	16.60 - 18.10 18.10 - 19.50 19.50 - 20.00 20.00 - 21.00	Water Water Water Water	100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection 4 No. vibrating piezomet 8.00m, 16.00m and 32.0 out as per the Client inst	00m BGL. (5) UXO carried tructions. (6) Aquifer een 12.15-10.15m prior to
1	mensions ii Scale 1:25					tion of syr ns see Ke	mbols and by Sheets	Chec	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

Tel: 0191 387 4700 Fax: 0191 387 4710

<b> </b>

#### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Groun	d Investigation	for NZT		Exploratory Hole No.
Client: AECOM		n-west of Redcar, North Yor E:457026.135 N:525257.65		MS\BH10
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longye	ear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 3 of 16

RUN	DETA	AILS					STRATA		je _
Depth	TCR	ture	Į.	Reduced		Depth	Desci	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	In the second
(102mm)	0					- - - (1.70) -		(1) Grey MUDSTONE. (Driller describes as 'weak' recovered as angular hard pieces). (continued)	
21.00 (102mm)	20 (0) 0	NI		-13.90		- - - - - 21.40	24.40.452		
21.50 (102mm)	40 (0) 0	NR NR				- - -(0.60) -	21.40-21.50m non-intact. 21.50-21.80m no recovery. 21.80-22.00m non-intact.	Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
22.00				-14.50		- 22.00	2.000 22.000		
22.50 (mm 201)	40 (40) 0	NR 10 NI		-15.00		(0.50)	22.30-22.30m no recovery.  22.30-22.50m subhorizontal (5-25 degrees) closely spaced planar tight clean discontinuities.  22.50-22.60m non-intact.	Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).  Weak to moderately weak dark grey black fossiliferous MUDSTONE	
23.00 23.00	100 (100) 68	6				- - -	22.60-25.40m subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.	partially weathered with occasional fragments of shell. (Redcar Mudstone Formation).	
(uma) 24.00	100 (93)					-			

Drilling	g Progress and	l Water Obser	vations	S	anda	rd Pene	tration Test	Flush			General	
Date	Depth	Casing	Wate Stand		pth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks
15/06/2021 16/06/2021	21.50 21.50	21.50 21.50	0.00	0   21		C C	50/161mm N40 50/167mm	21.00 - 21.50 21.50 - 22.00 22.00 - 22.50 22.50 - 23.00 23.00 - 24.00 24.00 - 25.50	Water Water Water Water Water Water	100 100 100 100 100 100	Vacuum excavation insp to drilling. (3) Inspection 4 No. vibrating piezomet 8.00m, 16.00m and 32.0 out as per the Client inst	00m BGL. (5) UXO carried tructions. (6) Aquifer een 12.15-10.15m prior to
	All dimensions in metres Scale 1:25.00						tion of syn ns see Ke		1 4	cked by:	Logged by: G.T/R.C/D.P	Contract No. 4339

Status:-

**FINAL** 

Exploratory Hole No.

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fa Tel: 01772 735 300 Fa
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

												_	
Client:				AECO	М			Location: Norti	n-west of Redcar, E:457026.135 N:	North Yor 525257.65	kshire	MS\BH10	0
Method (I Sonic	Equipme :/Rotar	nt): y Cori	ng (B	oart Lor	ngyear L	S250/Bo	art Longyea		Ground Level (m): 7.502		Start Date: 07/06/2021	Sheet: 4 of 16	
RUN	DETA	ILS							STRATA				_ f
Depth	TCR (SCR) RQD	Fracture	Water	Reduced		Depth			Desc	cription			Instrument/ Backfill
& (Core Ø)		Frac	×	Level	Legend	(Thickness)		Discontinuity	Detail		Mai		lns
(102mm)	60	NI					25.40-25.50m	non intest		black for partially fragmen	ossiliferous M weathered wathered wathered wather wather of shell. Mudstone F	with occasional	
25.50 (m.go))	100 (87) 67	8 NI 8				- - - - - - - - - - - - - - - - - - -	25.50-25.90m and irregular ro clean discontin 25.90-26.10m	subhorizontal ough undulating nuities non-intact subhorizontal ough undulating	(10-20 degrees) planar smooth and rough tight (10-20 degrees) planar smooth and rough tight				
(102mm) (102mm)	100 (87) 47	NI					27.80-28.00m						
		6				<u> </u>	28.00-31.20m and irregular ro	subhorizontal ough undulating	(10-20 degrees) planar smooth and rough tight				

Drillin	g Progress and	l Water Observ	/ations	Standa	ard Pene	tration Test		Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks	
							25.50 - 27.00 27.00 - 28.50	Water Water	100 100	Vacuum excavation insp to drilling. (3) Inspection 4 No. vibrating piezomet 8.00m, 16.00m and 32.0 out as per the Client inst	0m BGL. (5) UXO carried ructions. (6) Aquifer	
										protection installed betw commencing rotary drilling	een 12.15-10.15m prior to ng.	
	mensions i					tion of syr	nbols and	\ \	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339	

	Regional Office:	Unit 20 Business Development Centre, E	LHOLE RECORD	Tel: 01772 735 300 Fax: 01772	
Project:	Pre	eliminary Onshore Ground I	nvestigation for NZT		Exploratory Hole No.
Client:	AECOM		Location: North-west of Redcar, I	North Yorkshire	MS\BH10

				AECO	M			Nort	h-west of Redcar, I <u>E:457026.135 N:5</u>	North Yorl 25257 65	kshire 1	MS/BH1	U
Method (I Sonic	Equipme /Rotar	ent): ry Cori	ng (B	oart Lor	ngyear L	S250/Bo	art Longyea	r DB520)	Ground Level (m): 7.502		Start Date: 07/06/2021	Sheet: 5 of 16	
RUN	DETA	AILS							STRATA	-		-	ant/
Depth	TCR (SCR) RQD	ture	Water	Reduced	Lamand	Depth			Descr	ription			Instrument/
& core Ø)	RQD	Fracture Index	Wa	Level	Legend	(Thickness)		Discontinuit	y Detail		Ma	in	sr
						-	clean discontir	nuities.		Weak to	moderately	weak dark grey	
						}				partially	ssiliferous M weathered	with occasional	
3.50						1				fragmer	its of shell.		
.50	100									(Redcar	Mudstone F	-ormation).	
	(100) 60					(12.20)				(COITIII I	eu)		
						1							
						1							
(mr													
(102mm)													
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.50	100					-							
	(100) 43					-							
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(102mm)						}							
(102						}							
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0.20	100					}							
	(73) 33					}							
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(mr						1							
(102mm)						1							
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		NI				1	31.20-31.60m	non-intact.					
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						]							
						]							
.70		9				1	31.60-33.00m	subhorizonta	l (10-20 degrees) planar				
	87 (87)					1	clean discontir	nuities.	smooth and rough tight				
	(87) 37												
						Ī							
						T							
						†							

Drilling	Progress and	l Water Obser	vations	Standa	ard Pene	tration Test	Flush			General		
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Remarks		
16/06/2021 17/06/2021	29.50 29.50	29.50 29.50	0.00 7.60	11			28.50 - 29.50 29.50 - 30.20 30.20 - 31.70 31.70 - 33.20	Water 100 Water 100 Water 100 Water 100 Water 60		30.20 Water 100 Vacuum excavation inspection to drilling. (3) Inspection pit dug 4 No. vibrating piezometers ins		ection pit attempted prior pit dug prior to drilling. (4) ers installed at 4.30m, 0m BGL. (5) UXO carried ructions. (6) Aquifer een 12.15-10.15m prior to
All dimensions in metres Scale 1:25.00		For example.	For explanation of symbols and abbreviations see Key Sheets			Chec	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339			

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	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 38 Tel: 01772 7
		DRILLHOLE RECORD	
Project:			

Status	FINAL

Project: Preliminary Onshore Grou	Explo	ratory Hole No.		
Client: AECOM	-west of Redcar, North Y E:457026.135 N:525257.			MS\BH10
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Long	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet:	6 of 16

RUN	I DETA	AILS					STRATA		lut/
Depth	TCR	Fracture Index	ter	Reduced		Depth	Desci	ription	I Instrument/
& (Core Ø)	TCR (SCR) RQD	Frac	Water	Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	lnst B
(102mm)		NR				-	33.00-33.20m no recovery.	Weak to moderately weak dark grey black fossiliferous MUDSTONE partially weathered with occasional fragments of shell. (Redcar Mudstone Formation). (continued)	
33.20	100 (87) 67	8				-	33.20-33.80m subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.		
(102mm)		7		-27.20		- - - - - - - - 34.70	33.80-34.00m non-intact.  34.00-34.70m subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.		
						-		Complete at 34.70m BGL.	

Drilling	Drilling Progress and Water Observations			Standa	ard Pene	tration Test	Flush			General	
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks
17/06/2021	33.20	33.20	0.00				33.20 - 34.70 Water 50		Vacuum excavation insp to drilling. (3) Inspection 4 No. vibrating piezomet 8.00m, 16.00m and 32.0 out as per the Client inst	Om BGL. (5) UXO carried ructions. (6) Aquifer een 12.15-10.15m prior to	
All dimensions in metres Scale 1:25.00  For explanation of symbols and abbreviations see Key Sheets			Chec	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339					

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

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651							
Method (Equipment) Sonic/Rotary (	: Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 7 of 16			

# Figure MS\BH10.1 MS\BH10 0.45-1.20m BGL



## Figure MS\BH10.2 MS\BH10 1.20-2.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ect: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651								
Method (Equipment): Sonic/Rotary Cori	ing (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 8 of 16				

# Figure MS\BH10.3 MS\BH10 2.70-4.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH10 Sample: 2.70-4.20m BGL "B..g"B..g"B..g"B..g"

## Figure MS\BH10.4 MS\BH10 4.20-5.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.		
Client: AECOM	MS\BH10		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 9 of 16

# Figure MS\BH10.5 MS\BH10 5.70-7.20m BGL



## Figure MS\BH10.6 MS\BH10 7.20-8.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	ject: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651							
Method (Equipmen Sonic/Rotary	nt): / Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 10 of 16			



## Figure MS\BH10.8 MS\BH10 10.20-11.70m BGL



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#### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Exploratory Hole No.								
Client:	ient:  AECOM  AECOM  Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651								
Method (Equipment): Sonic/Rotary Coring (E	Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 11 of 16				





Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

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#### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yor E:457026.135 N:525257.65		MS\BH10
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 12 of 16



#### Figure MS\BH10.12 MS\BH10 18.10-22.50m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	ient:  AECOM  AECOM  Location:  North-west of Redcar, North Yorkshire  E:457026,135 N:525257,651										
Method (Equipment): Sonic/Rotary Corin	ng (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 13 of 16						



# ROCK CORE PHOTOGRAPHIC BOARD Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH10 Sample: 24.00-25.50m BGL THE THE PROPERTY OF THE PROPER

2" B. Q" B. Q" B. Q" B. Q

Figure MS\BH10.14 MS\BH10 24.00-25.50m BGL

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North ` ::457026.135 N:525257		MS\BH10					
Method (Equipment Sonic/Rotary	nt): y Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 14 of 16					





Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RC

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#### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651										
Method (Equipment): Sonic/Rotary Co	ring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 15 of 16						



#### Figure MS\BH10.18 MS\BH10 30.20-31.70m BGL



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#### **DRILLHOLE RECORD**

FINAL

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651										
Method (Equipment): Sonic/Rotary Co	oring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 16 of 16						



#### Figure MS\BH10.20 MS\BH10 33.20-34.70m BGL



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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Expl	oratory Hole No.
Client:	AECOM		-west of Redcar, North Yor E:457121.000 N:525296.16			MS\BH11
Method (Equipment): Sonic/Rotary Coring	g (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet:	1 of 2

SAMF	PLES & TE	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
0.30 0.30-1.20 0.30 0.30-1.20 0.30	ES1 <sub>(SL1)</sub> SL1 <sub>(SS)</sub> J8 <sub>(SL1)</sub> B9 <sub>(SL1)</sub> PID	<0.1ppm				(1.60)	MADE GROUND (Grass over black red slightly silty sandy gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes brick, ash and slag. Cobbles are angular and include brick. Slag is 75-100%).	88888800 200 D	
0.50 0.50 1.00 1.00 1.20-2.20	ES2 <sub>(SL1)</sub> PID ES3 <sub>(SL1)</sub> PID SL2 <sub>(SS)</sub>	<0.1ppm <0.1ppm		5.66		1.60	at c.1.20m BGL medium dense.		
1.20 1.20-1.95 1.20 1.50 1.95	J10 <sub>(SL2)</sub> B11 <sub>(SL2)</sub> S PID J12 <sub>(SL2)</sub>	N17 <0.1ppm				(0.70)	MADE GROUND (Brown gravelly sand with fragments of metal. Gravel is fine to coarse angular to subangular and includes slag and ash. Slag is 75-100%).		
1.95-2.70 2.00 2.00 2.50 2.70-4.20 2.70 2.70-3.45 2.70	B13 <sub>(SL2)</sub> ES4 <sub>(SL2)</sub> PID PID SL3 <sub>(SS)</sub> J14 <sub>(SL3)</sub> B15 <sub>(SL3)</sub>	<0.1ppm <0.1ppm		4.96		(1.20)	MADE GROUND (Black sandy gravel with high cobble content. Gravel is fine to coarse angular to subangular and includes slag, vesicular slag and ash. Slag is 75-100%). at c.2.70m BGL loose.		
3.00 3.00 3.45 3.45-4.20 3.50	ES5 <sub>(SL3)</sub> PID J16 <sub>(SL3)</sub> B17 <sub>(SL3)</sub> PID	<0.1ppm		3.76		3.50	MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to		
4.00 4.00 4.20-5.70 4.20	ES6 <sub>(SL3)</sub> PID SL4 <sub>(SS)</sub> J18 <sub>(SL4)</sub>	<0.1ppm				(1.10)	subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%). (Engineer notes chemical odour). at c.4.20m BGL very dense.		
4.20-4.50 4.20 4.50 4.50-5.10 4.50	B19 <sub>(SL4)</sub> S J20 <sub>(SL4)</sub> B21 <sub>(SL4)</sub> PID	50/20mm <0.1ppm		2.66	× · · · · · · · · · · · · · · · · · · ·	(0.60) - - - - - - - 5.20	Brown silty SAND with numerous fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).		
5.00 5.00 5.10 5.10-5.70	ES7 <sub>(SL4)</sub> PID J22 <sub>(SL4)</sub> B23 <sub>(SL4)</sub>	<0.1ppm		2.00		5.20	Loose to medium dense light grey brown clayey SAND with rare fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).		
5.70-7.20 5.70 5.70-6.45 5.70 5.70	SL5 <sub>(SS)</sub> J24 <sub>(SL5)</sub> B25 <sub>(SL5)</sub> S PID	N17 <0.1ppm				- - - - - - -			
6.45 6.45-7.20 6.70	J26 <sub>(SL5)</sub> B27 <sub>(SL5)</sub> PID	<0.1ppm				(3.50)			
7.20-8.70 7.20 7.20-7.90 7.20 7.70	SL6 <sub>(SS)</sub> J28 <sub>(SL6)</sub> B29 <sub>(SL6)</sub> S PID	N7 <0.1ppm				- - - - - - -			

Borin	Boring Progress and Water Observations					iner Sample	Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
02/06/2021	0.00	0.00	178		0.30 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (4) Test pockets at 23.00m and 26.00m BGL for HDP testing. (5) Redrilled between 23.40-24.50m and 26.40-27.10m BGL using Geobore. (6) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.20-4.40m and 7.00-11.40m BGL. (7) UXO carried out as per the Client instructions. (8) Aquifer protection installed between 14.60-13.00m BGL prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	G.T/R.C	4339

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

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client: AECOM		-west of Redcar, North Yor E:457121.000 N:525296.16		MS\BH11
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 2 of 2

SAMP	LES & TI	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.90 7.90-8.70	J30 <sub>(SL6)</sub> B31 <sub>(SL6)</sub>					-	Loose to medium dense light grey brown clayey SAND with rare fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits). (continued)	0000	
8.70-10.20 8.70 8.70-9.45 8.70 8.70	SL7 <sub>(SS)</sub> J32 <sub>(SL7)</sub> B33 <sub>(SL7)</sub> S PID	N14 <0.1ppm		-1.45		8.70 - - - - - - - - - - - - - - - - - - -	Medium dense dark grey brown gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes mudstone, limestone and sandstone.  (Tidal Flat Deposits).		
9.45 9.45-10.20 9.70	J34 <sub>(SL7)</sub> B35 <sub>(SL7)</sub> PID	<0.1ppm				- - - - -	(**************************************		
10.20-11.70 10.20 10.20-10.95 10.20 10.70	SL8 <sub>(SS)</sub> J36 <sub>(SL8)</sub> B37 <sub>(SL8)</sub> S PID	N12 <0.1ppm		-2.95	× · · · · · · · · · · · · · · · · · · ·	10.20	Medium dense dark grey brown silty slightly gravelly SAND with numerous fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone.  (Tidal Flat Deposits).		
10.95 10.95-11.70	J38 <sub>(SL8)</sub> B39 <sub>(SL8)</sub>				× ×		(Tad. Flat Boposito).		
11.70-13.20 11.70 11.70-12.90 11.70 11.70	SL9 <sub>(SS)</sub> J40 <sub>(SL9)</sub> B41 <sub>(SL9)</sub> S PID	N28 <0.1ppm				-			
12.70	PID	<0.1ppm		-5.65	×	12.90			
12.90 12.90-13.20 13.20-13.65 13.20-14.70 13.20 13.20-13.95	J42 <sub>(SL9)</sub> B43 <sub>(SL9)</sub> UT1 SL10 <sub>(SS)</sub> J44 <sub>(SL10)</sub>						Soft dark grey brown sandy slightly gravelly CLAY with numerous fragments of shell. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes mudstone, sandstone, coal and limestone.  (Tidal Flat Deposits).		
13.20 13.20 13.70 13.95 13.95-14.70	B45 <sub>(SL10)</sub> ES48 PID PID J46 <sub>(SL10)</sub> B47 <sub>(SL10)</sub>	<0.1ppm <0.1ppm				(1.80) - - - - - - -	at c.12.90m BGL clay is of low to intermediate plasticity. at c.13.20m BGL low strength. Clay is of low plasticity.		
14.70	PID	<0.1ppm		-7.45	<u></u>	14.70	Boring complete at 14.70m BGL - continued by rotary drilling.		
						-			
						- -			

Borin	Boring Progress and Water Observations					iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
02/06/2021 03/06/2021 03/06/2021	10.20 10.20 14.70	10.20 10.20 14.70	178 178 178 178	7.45 4.00 4.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70	178 178 178 178 178	100 100 100 100 100	Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) High Pressure Dilatometer testing carried out. Refer to Appendix III for results. (4) Test pockets at 23.00m and 26.00m BGL for HDP testing. (5) Redrilled between 23.40-24.50m and 26.40-27.10m BGL using Geobore. (6) Double installation: 2 No. 50mm diameter slotted standpipes installed between 1.20-4.40m and 7.00-11.40m BGL. (7) UXO carried out as per the Client instructions. (8) Aquifer protection installed between 14.60-13.00m BGL prior to commencing rotary drilling.

All dimensions in metres Scale 1:50.00  For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by: G.T/R.C	Contract No. 4339
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#### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Groun	ect: Preliminary Onshore Ground Investigation for NZT										
Client: AECOM		i-west of Redcar, North Yo E:457121.000 N:525296.16	MS\BH11								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longy	ear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 1 of 17							

DIIN	I DETA	ui e		Ι				CTDATA				Τ.
								STRATA Descri	ntion			Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuit - F		puon	NA-1:		nstru Bac
(Cole Ø)	KQD	正 RO		-7.45	-	14.70	Discontinuity E 14.70-15.00m rotary openhole		(1) L amis	Main nated brown		<u> </u>
				-7.43	<u> </u>	(0.30)	14.70-10.00m Totally openhole	, drilling.	(Driller de	escribes as	'soft').	
45.00				7.75	<del></del>	_` ′			(Probable	e Tidal Flat	Depósits).	
15.00	34	SOIL		-7.75	0	15.00	15.00m J48		Firm grev	y brown slig	htly sandy slightly	<b>-</b>
						_	15.00-20.50m soil. 15.00m B49		gravelly	CLAY. Sand	I is fine to coarse.	
					-	- -(0.60)					rse subangular to udes sandstone,	
Ê						(0.00)				e and limes	tone.	
(102mm)					<u> </u>				(Glacial	l III).		
=				-8.35		15.60			0.1155			<i></i>
					<u> </u>	_			Stiff grey	r brown sligh CLAY. Sand	ntly sandy slightly I is fine to coarse.	
						-			Gravel is	fine to coar	rse subangular to	
15.90	83				<u></u>	-	15.90m J50		subround	ded and incl e and limes	udes sandstone, tone	
						_	15.90m U51		(Glacial <sup>-</sup>	Till).		
					<u></u>	-			15.90m . plasticity	clay is of i	ntermediate	
					<u> </u>				placticity	•		
					<u>- °</u>		16.35m B52		16 35m	clav is of i	ntermediate to	
					<u> </u>	_			high plas		mermediate to	
(E						_						
(102mm)						_						
					<u> </u>	-						
						_						
						-						
						_						
					<u> </u>	-	17.20m J53				ntermediate	
17.40							17.20m B54		plasticity			
	77				<u> </u>							
						-	17.55m U55		17.55m .	very high	strength. Clay is	
					<u> </u>	-				ediate plast		
						_						
					· · · ·	-						
						-						
(102mm)					<u> </u>	(5.10)						
) <u></u>						-						
					<u> </u>							
					<u> </u>							
					<del></del>							<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>

Drilling	Drilling Progress and Water Observations					tration Test		Flush		General	
Date	Depth	Casing	Water Standin		Туре	Result	From - To	Туре	Returns (%)	Remarks	
09/06/2021	14.70	14.70	0.00				14.70 - 15.00 15.00 - 15.90 15.90 - 17.40 17.40 - 18.90	Water Water Water Water	100 100 100 100	Inspection pit dug prior to Pressure Dilatometer tes Appendix Ill for results. (and 26.00m BGL for HD between 23.40-24.50m a using Geobore. (6) Dout 50mm diameter slotted s between 1.20-4.40m an UXO carried out as per t	sting carried out. Refer to 4) Test pockets at 23.00m pp testing, (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. standpipes installed d 7.00-11.40m BGL. (7) the Client instructions. (8) ed between 14.60-13.00m
	nensions ii Scale 1:25					tion of syn	nbols and y Sheets	Chec	ked by: .W.	Logged by: G.T/R.C	g rotary drilling. Contract No. <b>4339</b>

**AECOM** 

Client:

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#### Status:-**DRILLHOLE RECORD FINAL** Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire MS\BH11 Start Date: 02/06/2021 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

PIIN	I DETA	AII S	I DETAILS STRATA									
Depth	TCR		L					ription			Instrument/ Backfill	
& (Core Ø)	(SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Inplion	Main		Instru Bac	
(3310 0)		ш	-		<u></u>		Discontinuity Detail	Stiff arev b		tly sandy slightly	1/////	
18.90						-		gravelly CL	AY. Sand	is fine to coarse.		
	0				· · · ·		18.90m J1 18.90m J56	subrounde	d and incl	se subangular to udes sandstone,		
mu (mu						-	18.90m B57	mudstone (Glacial Til				
(102mm)					<u> </u>	-		19.15-20.1	Śm eng	ineer notes sibly disturbed		
19.40						-		and may h	ave expan	ded within core		
	0					-		box. The form	ollowing as y could be	sumed zone of more extensive.		
						-			•			
						_						
(102mm)					· · · · ·	-						
(102						_						
					<u> </u>	-						
						-						
20.40 ਵ	100				- <u>°</u>		00.40					
20.50 ह	71	NR				-	20.40m J58 20.50-20.70m no recovery.					
	(50) 0			-13.45		20.70	,					
<u>E</u>		14				-	20.70-21.20m subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight	Extremely grey MUDS	weak thinl	y laminated light		
(102mm)						-	infilled (clay) discontinuities.	(Redcar M				
						-						
21.20						_						
	79 (79)	NR				(1.20)	21.20-21.35m no recovery.					
_	0	9				_	21.35-21.90m subhorizontal (5-25 degrees) closely spaced planar smooth tight and open infilled (clay)					
(102mm)						-	discontinuities.					
5												
						-						
21.90	68	NR		-14.65		21.90	21.90-22.15m no recovery.	Very weak	thinly lam	nated dark grey	<i>-{//////</i>	
	(55) 0							MUDSTON (Redcar M	NE partially	weathered.		
		NI				-	22.15-22.25m non-intact.	(1 tododi IVI	addionic I	oiadonj.		
		15				-	22.25-22.65m subhorizontal (5-25 degrees) closely spaced planar smooth tight clean discontinuities.					
102mm)						-						
1 21												
		12									<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test	Flush			General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
09/06/2021 10/06/2021	21.90 21.90	21.90 21.90	0.00	18.90 20.40 21.20	S S C	N18 N13 100/96mm	18.90 - 19.40 19.40 - 20.40 20.40 - 20.50 20.50 - 21.20 21.20 - 21.90 21.90 - 23.00	Water Water Water Water Water Water	100 100 100 100 100 100	Inspection pit dug prior to Pressure Dilatometer tes Appendix Ill for results. (and 26.00m BGL for HD between 23.40-24.50m a using Geobore. (6) Dout 50mm diameter slotted s between 1.20-4.40m an UXO carried out as per t	sting carried out. Refer to 4) Test pockets at 23.00m IP testing, (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. tandpipes installed 17.00-11.40m BGL. (7) he Client instructions. (8) and between 14.60-13.00m	
All dimensions in metres Scale 1:25.00			For explanation of symbols and abbreviations see Key Sheets				\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: G.T/R.C	Contract No. <b>4339</b>		

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#### **DRILLHOLE RECORD**

Status:- FINAL

Project: Preliminary Onshore Ground	Exploratory Hole No.										
Client: AECOM		-west of Redcar, North Yor E:457121.000 N:525296.16	MS\BH11								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 3 of 17							

RUN	DETA	AILS					STRATA		int/
Depth	TCR	ture	Ē	Reduced		Depth	Descr	ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	nst B
23.00	60 (27) 0					-(1.85) - 	22.65-23.95m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely spaced planar undulating smooth open and tight clean discontinuities.	Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
(a.g.)				-16.50		- - - - - 23.75			
(102mm)	100 (100) 0	18		-10.50			23.95-24.50m subhorizontal (5-25 degrees) very closely spaced planar to undulating smooth open and tight clean discontinuities.	Weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).	
24.50	60	15				-	24.50-26.00m subhorizontal (5-25 degrees) and		
	(53)					- - -	subvertical (65-85 degrees) very closely to closely spaced planar to undulating smooth open and tight clean discontinuities.		
(102mm)						- - - - - -		24.90-27.90m redrilled high Pressure Dilatometer socket.	
26.00	44 (31) 0	NR				- - -	26.00-26.45m no recovery.		
(102mm)		15				-	26.45-30.20m horizontal (0-5 degrees) to subvertical (65-85 degrees) closely to very closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.		

Drilling	Progress and	l Water Observ	vations	Stand	ard Pene	tration Test		Flush		Ge	neral
Date	Depth	Casing	Wate Standi		Туре	Result	From - To	Туре	Returns (%)	Rer	marks
10/06/2021 11/06/2021	24.90 24.90	24.90 24.90	0.00				23.00 - 23.75 23.75 - 24.50 24.50 - 26.00 26.00 - 26.80	Water Water Water Water	100 100 100 100	Inspection pit dug prior t Pressure Dilatometer tet Appendix Ill for results. ( and 26.00m BGL for HL between 23.40-24.50m; using Geobore. (6) Doul 50mm diameter slotted between 1.20-4.40m an UXO carried out as per t Aquifer protection install	sting carried out. Refer to 4) Test pockets at 23.00m pp testing, (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. standpipes installed d 7.00-11.40m BGL. (7) the Client instructions. (8) ed between 14.60-13.00m
	All dimensions in metres Scale 1:25.00				tion of syr ns see Ke	nbols and y Sheets	Chec	ked by: .W.	Logged by: G.T/R.C	g rotary drilling. Contract No. <b>4339</b>	

$\triangle$	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 Tel: 01772 735 300 Fax: 0177
		DRILLHOLE RECORD	
Project:	Pro	Niminary Openora Cround Investigation for NZT	

Status:-**FINAL** 

Project:	Exploratory Hole No.							
Client:	t: AECOM  AECOM  North-west of Redcar, North Yorkshire E:457121.000 N:525296.160							
Method (Equipment Sonic/Rotary	t): Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 4 of 17			

DIIN	DETA	UI S					STRATA			$\overline{\top}$
Depth							Descri	ription		Instrument/ Backfill
& (Core Ø)	TCR (SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Main		Instru Bac
26.80		ш					Discontinuity Detail			//////
	100 (100) 33					-		Weak thinly laminate MUDSTONE partially (Redcar Mudstone Fo	weathered.	
(102mm)	33					_		(continued)	ormation).	
27.10	100					-				
	100 (75) 30					_				
						_				
(102mm)						-				
(10						-				
						-				
27.90										
	100 (80) 13					-				
	13					_				
						_				
						-				
						-				
(102mm)						_				
= = = = = = = = = = = = = = = = = = = =										
						(10.25)				
						_				
						-				
29.40	100									
	100 (68) 0					-				
						-				
(102mm)						-				
5										
30.20	100	7				<u> </u>	30.20.30.90m subharizantal (5.25 dagraes) closely			
	(71) 46	<b>'</b>				_	30.20-30.90m subhorizontal (5-25 degrees) closely spaced planar to undulating open and tight smooth infilled (clay) discontinuities.			
e e							, ,,			
(102mm)						-				

Drilling	Progress and	l Water Obser	r Observations Standard Penetration Test Flush					General				
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
11/06/2021 14/06/2021	30.20 30.20	30.20 30.20	0.00				26.80 - 27.10 27.10 - 27.90 27.90 - 29.40 29.40 - 30.20 30.20 - 30.90	Water Water Water Water Water	100 100 100 100 100	Inspection pit dug prior t Pressure Dilatometer te: Appendix Ill for results. (and 26.00m BGL for HI between 23.40-24.50m; using Geobore. (6) Doul 50mm diameter slotted between 1.20-4.40m an UXO carried out as per I Aquifer protection install	sting carried out. Refer to 4) Test pockets at 23.00m pt testing, (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. standpipes installed bf 7.00-11.40m BGL. (7) he Client instructions. (8) ed between 14.60-13.00m	
All dimensions in metres Scale 1:25.00				tion of syr ns see Ke	mbols and by Sheets	Chec	ked by: .W.	Logged by: G.T/R.C	g rotary drilling. Contract No. <b>4339</b>			

Print Date and Time: 29/11/2021 14:50:41

Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL

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Project:

Client:

#### Status:-**DRILLHOLE RECORD FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\BH11 **AECOM** Start Date: 02/06/2021 Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

DUIN	I DETA			Ι			STRATA			Ι.
-										Instrument/ Backfill
Depth &	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		ription		Bac
(Core Ø)	RQD	Ë =	^	2010.		(111101111000)	Discontinuity Detail	Mai		=
						-		Weak thinly laminate MUDSTONE partiall	v weathered.	
30.90	100	14				}	30.90-31.70m subhorizontal (5-25 degrees) closely	(Redcar Mudstone F	ormation).	
	(73) 31					-	spaced planar to undulating open tight smooth infilled (clay) discontinuities.	(continued)		
						ļ .				
(102mm)										
(102										
						_				
						-				
31.70	10	NR				-	31.70-32.33m no recovery.			
	(10) 0					-	on o oz.oom no recovery.			
						-				
(102mm)						-				
1 01										
32.40 ਵ	400	10				-	32.33-34.00m subhorizontal (5-25 degrees) closely spaced planar to undulating open tight smooth infilled			
32.50	100 (100) 0					-	(clay) discontinuities.			
	100					-				
	(87) 53					-				
						-				
Ē						-				
.102mm)						-				
						-				
						-				
						Ī				
										<b>\</b> //////
34.00	100			-26.75		34.00				<i>\\\\\\</i>
	100 (97) 53	6				-	34.00-35.50m subhorizontal (5-25 degrees) closely spaced planar to undulating open and tight smooth	Medium strong thinly grey MUDSTONE pa	/ Iaminated dark artially weathered	
	: :					-	clean discontinuities.	with occasional foss	ilised remains	<b>V/////</b>
						-		(2-40mm in size). (Redcar Mudstone F	ormation).	
						<u> </u>		,	,	<b>\/////</b>
										<i>\\\\\\\</i>

Drillin	g Progress and	l Water Obser	vations	Standa	rd Pene	tration Test		Flush		Ge	neral	
Date	Depth	Casing	Wate Stand	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
							30.90 - 31.70 31.70 - 32.40 32.40 - 32.50 32.50 - 34.00 34.00 - 35.50	Water Water Water Water Water	100 100 100 100 100	Inspection pit dug prior to Pressure Dilatometer tes Appendix Ill for results. (and 26.00m BGL for HD between 23.40-24.50m a using Geobore. (6) Dout 50mm diameter slotted s between 1.20-4.40m an UXO carried out as per t	sting carried out. Refer to 4) Test pockets at 23.00m IP testing, (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. standpipes installed bf 7.00-11.40m BGL. (7) he Client instructions. (8) ed between 14.60-13.00m	
All dimensions in metres Scale 1:25.00		For example	oplana eviatio	tion of syr	mbols and by Sheets	Chec	ked by:	Logged by: G.T/R.C	g rotary drilling. Contract No. 4339			

Status:-

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Œ	DRILLHOLE RECORD								
Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.				
Client:	Client:  AECOM  AECOM  Location:  North-west of Redcar, North Yorkshire  E:457121.000 N:525296.160								
Method (Equipment): Sonic/Rotary Co	oring (Boart Longyear LS250/Boart Longye	ar DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 6 of 17				

RUN	I DETA	ILS					STRATA	·	nt/
Depth	TCR	ture	ř	Reduced		Depth	Description		Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	Inst
(102mm)				29.25		(1.50)	Medium grey MU with occ (2-40mn (Redcar (continue 35.00m	strong thinly laminated dark IDSTONE partially weathered asional fossilised remains n in size). Mudstone Formation). ed) weak.	
				-28.25		35.50	Complet	e at 35.50m BGL.	<u> </u>
						- - - - - - - - - - - - - - - - - - -			

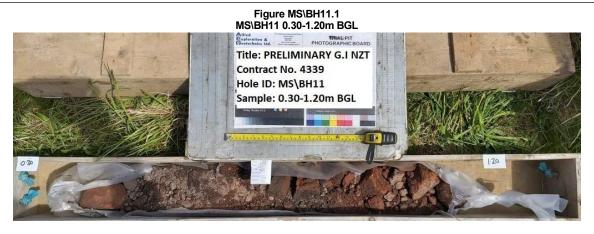
Drilling	g Progress and	l Water Observ	/ations	Standard Penetration Test				Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
14/06/2021	35.50	35.50	0.00							Inspection pit dug prior to Pressure Dilatometer tes Appendix Ill for results. (and 26.00m BGL for HD between 23.40-24.50m a using Geobore. (6) Dout 50mm diameter slotted s between 1.20-4.40m and UXO carried out as per t	sting carried out. Refer to 4) Test pockets at 23.00m Plv testing. (5) Redrilled and 26.40-27.10m BGL ole installation: 2 No. standpipes installed by 7.00-11.40m BGL. (7) he Client instructions. (8) ed between 14.60-13.00m	
1	All dimensions in metres Scale 1:25.00					tion of syr ns see Ke	nbols and y Sheets	Chec	ked by: .W.	Logged by: G.T/R.C	Contract No. 4339	

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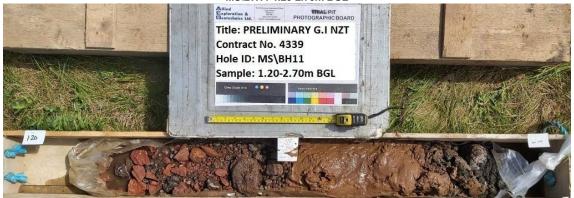
#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North \ ::457121.000 N:525296.		MS\BH	111					
Method (Equipment Sonic/Rotary	nt): Coring (Boart Longyear LS250/Boart Longyean		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 7 of 1	17					



## Figure MS\BH11.2 MS\BH11 1.20-2.70m BGL



Project:

Client:

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

**AECOM** 

#### **DRILLHOLE RECORD FINAL** Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire MS\BH11

E:457121.000 N:525296.160 | Ground Level (m): | 7.255 Start Date: 02/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520) 8 of 17



# Figure MS\BH11.4 MS\BH11 4.20-5.70m BGL Allied Exploration & THAL PIT PHOTOGRAPHIC BOARD Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH11 Sample: 4.20-5.70m BGL

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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminar	Exploratory Hole No.		
Client: AECOM	of Redcar, North Yo 21.000 N:525296.16		MS\BH11
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS	Level (m): 7.255	Start Date: 02/06/2021	Sheet: 9 of 17

# Figure MS\BH11.5 MS\BH11 5.70-7.20m BGL



## Figure MS\BH11.6 MS\BH11 7.20-8.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160			MS\BH11
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 10 of 17



# Figure MS\BH11.8 MS\BH11 10.20-11.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160			MS\BH11
Method (Equi Sonic/Ro	ipment): otary Coring (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 11 of 17

# Figure MS\BH11.9 MS\BH11 11.70-13.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH11 Sample: 11.70-13.20m BGL

# Figure MS\BH11.10 MS\BH11 13.20-14.70m BGL



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Tel: 0191 387 4700 Fax: 0191 387 4710



#### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.	
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160			MS\BH11
Method (Equipment): Sonic/Rotary Corin	ng (Boart Longyear LS250/Boart Longyea		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 12 of 17





Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

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#### **DRILLHOLE RECORD**

Status:-

**FINAL** 

Project:
Preliminary Onshore Ground Investigation for NZT

Client:
AECOM

AECOM

North-west of Redcar, North Yorkshire
E:457121.000 N:525296.160

Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

Reploratory Hole No.

MS\BH11

Exploratory Hole No.

MS\BH11

E:457121.000 N:525296.160

Ground Level (m):
7.255

02/06/2021

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# Figure MS\BH11.13 MS\BH11 19.15-21.20m BGL | Photographic Board | Photo

#### Figure MS\BH11.14 MS\BH11 21.20-23.00m BGL



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#### **DRILLHOLE RECORD**

FINAL

Project:
Preliminary Onshore Ground Investigation for NZT

Client:
AECOM

Client:
North-west of Redcar, North Yorkshire
E:457121.000 N:525296.160

Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)

Client:
North-west of Redcar, North Yorkshire
E:457121.000 N:525296.160

Ground Level (m):
7.255

Start Date:
02/06/2021

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Figure MS\BH11.16
MS\BH11 23.40-26.00m BGL - Redrilled 23.40-24.50m BGL using Geobore



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#### **DRILLHOLE RECORD**

FINAL

Project: Preliminary Onshore Ground Investigation for NZT				Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160			MS\BH11
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 15 of 17





Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG

Tel: 0191 387 4700 Fax: 0191 387 4710

#### **DRILLHOLE RECORD**

FINAL

Project: Prelimina	Exploratory Hole No.			
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear L	.S250/Boart Longyear DB520) Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 16 of 17	





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### **DRILLHOLE RECORD**

FINAL

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Project: Preliminary Onshore Groun	Exploratory Hole No.										
Client: AECOM											
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longy		Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 17 of 17							





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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Ехр	loratory Hole No.					
Client: AECOM							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet:	1 of 3		

SAMPL	LES & TI	ESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		Instrument/ Backfill
0.12-1.20 0.12 0.12-1.20 0.30	SL1 <sub>(SS)</sub> J5 <sub>(SL1)</sub> B6 <sub>(SL1)</sub> ES1			6.55		(0.60) 0.60	MADE GROUND (Grey sandy gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes vesicular slag. Cobbles are angular and include vesicular slag. Slag is 100%).	OV A VO	A A A
0.30 0.50 0.50 1.00 1.00	PID ES2 PID ES3 PID	<0.1ppm <0.1ppm <0.1ppm		5.95		(0.60) - 1.20	MADE GROUND (Dark grey sandy gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes vesicular slag and ash. Cobbles are angular and include vesicular slag. Slag is 100%).	38888888888888888888888888888888888888	
1.20-2.70 1.20 1.20-2.70 1.20 1.50	SL2 <sub>(SS)</sub> J7 <sub>(SL2)</sub> B8 <sub>(SL2)</sub> S PID	N15 <0.1ppm		4.55		(1.40)	MADE GROUND (Medium dense dark grey gravel and cobbles. Gravel is fine to coarse angular to subangular and includes vesicular slag. Cobbles are angular to subangular and includes vesicular slag. Slag is 100%). (Engineer notes poor recovery).	<b>28888</b>	
2.50 2.60 2.70-4.20 2.70-3.00 2.70 2.70-3.45 2.70 2.70	PID J9 <sub>(SL2)</sub> SL3 <sub>(SS)</sub> ES4 <sub>(SL3)</sub> J10 <sub>(SL3)</sub> B11 <sub>(SL3)</sub> S PID	<0.1ppm  N13 <0.1ppm		4.55	× · · · · · · · · · · · · · · · · · · ·		Medium dense light brown slightly silty gravelly SAND with rare fragments of shell. Sand is fine to medium. Gravel is fine to coarse subrounded and includes granite, sandstone and limestone. (Tidal Flat Deposits).		
3.00 3.45 3.45-4.20 3.50	PID J12 <sub>(SL3)</sub> B13 <sub>(SL3)</sub> PID	<0.1ppm			×0	(2.10) - - - -			
4.20-5.70 4.20 4.20-4.95 4.20 4.50	SL4 <sub>(SS)</sub> J14 <sub>(SL4)</sub> B15 <sub>(SL4)</sub> S PID	N23 <0.1ppm		2.45	×	4.70	Light grey brown silty SAND with rare fragments of shell. Sand is		
4.95 4.95-5.70	J16 <sub>(SL4)</sub> B17 <sub>(SL4)</sub>			2.20	×	- 4.95 	fine to coarse. (Tidal Flat Deposits).		
5.70-7.20	SL5 <sub>(SS)</sub>			1.35		(0.85) - - - 5.80	Dark grey brown clayey/silty slightly gravelly SAND with frequent fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes mudstone and sandstone.		
5.70 5.70 5.80 5.80-6.80	S PID J18 <sub>(SL5)</sub> B19 <sub>(SL5)</sub>	N10 <0.1ppm				(1.00)	(Tidal Flat Deposits).  Soft dark brown sandy CLAY with occasional fragments of shell.  Sand is fine to coarse. (Tidal Flat Deposits).		
6.70	PID	<0.1ppm		0.35		6.80	at c.5.80m BGL clay is of intermediate plasticity with occasional sand pockets.		
6.80 6.80-7.20 7.20-8.70 7.20	J20 <sub>(SL5)</sub> B21 <sub>(SL5)</sub> SL6 <sub>(SS)</sub> J22 <sub>(SL6)</sub>					(1.10)	Loose becoming medium dense dark grey brown silty slightly gravelly SAND with occasional fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes mudstone and sandstone.  (Tidal Flat Deposits).		
7.20-7.90 7.20 7.70	B23 <sub>(SL6)</sub> S PID	N5 <0.1ppm		-0.75	×0	7.90	(Tidal Fide Doposito).		

Boring Progress and Water Observations Liner Sample Information General	
Downston	
Date Depth Casing Casing Dia (mm) Water Standing From - To Internal Dia (mm) Recovery (%) Subsampled Remarks	
03/06/2021	Double otted standpipe andpipe installed 4.50m BGL per the Client stalled between

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C/D.P For explanation of symbols and abbreviations see Key Sheets Contract No. All dimensions in metres 4339 Scale 1:50.00

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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Exploratory Hole No.						
Client: AECOM							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G	Sheet: 2 of 3						

SAMP	LES & TE	ESTS				STRATA			rt _
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		Instrument/ Backfill
7.90 7.90-8.70	J24 <sub>(SL6)</sub> B25 <sub>(SL6)</sub>				×0		at c.7.90m BGL clayey very gravelly sand.  Medium dense light grey brown silty gravelly SAND with rare fragments of shell. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes mudstone and		
8.70-10.20 8.70 8.70-9.45 8.70 8.70	SL7 <sub>(SS)</sub> J26 <sub>(SL7)</sub> B27 <sub>(SL7)</sub> S PID	N11 <0.1ppm			X		sandstone. (Tidal Flat Deposits). (continued)		
9.45 9.45-10.20 9.70	J28 <sub>(SL7)</sub> B29 <sub>(SL7)</sub> PID	<0.1ppm			x				
10.20-11.70 10.20 10.20-10.95 10.20 10.70	SL8 <sub>(SS)</sub> J30 <sub>(SL8)</sub> B31 <sub>(SL8)</sub> S PID	N29 <0.1ppm			x	  .[(5.30)			
10.95 10.95-11.70	J32 <sub>(SL8)</sub> B33 <sub>(SL8)</sub>				× · · · · · · · · · · · · · · · · · · ·	- - - - -			
11.70-13.20 11.70 11.70-12.45 11.70 11.70	SL9 <sub>(SS)</sub> J34 <sub>(SL9)</sub> B35 <sub>(SL9)</sub> S PID	N23 <0.1ppm			×0	- - - - - - -			
12.45 12.45-13.20 12.70	J36 <sub>(SL9)</sub> B37 <sub>(SL9)</sub> PID	<0.1ppm			×0				
13.20-14.70 13.20 13.20-13.95 13.20 13.70	SL10 <sub>(SS)</sub> J38 <sub>(SL10)</sub> B39 <sub>(SL10)</sub> S PID	N31 <0.1ppm		-6.05	XO	13.20 - - - - -	Dense light grey brown silty gravelly SAND. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded and includes sandstone and mudstone. (Tidal Flat Deposits).		
13.95 13.95-14.70	J40 <sub>(SL10)</sub> B41 <sub>(SL10)</sub>				×	  (2.20) 			
14.70-16.20 14.70 14.70-15.40 14.70-15.15 14.70	SL11 <sub>(SS)</sub> J42 <sub>(SL11)</sub> B43 <sub>(SL11)</sub> S PID	N31 <0.1ppm		-8.25	x	·_             			
15.40 15.40-16.20 15.70	J44 <sub>(SL11)</sub> B45 <sub>(SL11)</sub> PID	<0.1ppm		10		-	Soft grey brown sandy CLAY. Sand is fine to coarse. (Tidal Flat Deposits). at 15.40m BGL clay of intermediate plasticity.		

					–				
Boring	Progress	s and Wat	er Observa	itions	L	iner Sample	e Informatio	n	General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
04/06/2021 07/06/2021	14.70 14.70	14.70 14.70	178 178	4.50 4.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178	100 100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	G.T/R.C/D.P	<b>4339</b>

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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Pı	elimin	ary Onshore Ground	Investigation	for NZT		Explora	tory Hol	e No.
Client:	AECOM	Л			-west of Redcar, Nort E:457207.512 N:5252		М	S\BH12	
Method (Equipment Sonic/Rotary		ngyear	LS250/Comacchio G	EO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet:	3 of 3	
CAMDIE	EC 9 TECTO				CTDATA				_

SAMPL	ES & TI	ESTS			STRATA		ant/	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
16.20-16.65	UT1	(100)		-9.50		(1.25) - - - - - - 16.65	Soft grey brown sandy CLAY. Sand is fine to coarse. (Tidal Flat Deposits). (continued) at c.16.20m BGL very low strength. Clay is of intermediate plasticity.	
				0.00		- - -	Boring complete at 16.65m BGL - continued by rotary drilling.	771 17777
						- - -		
						- - -		
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Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	n	General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
07/06/2021	16.65	16.20	146		16.20 - 16.65	116	100	No	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/R.C/D.P Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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### **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client:	AECOM		-west of Redcar, North		MS\BH12
Method (Equipment Sonic/Rotar	rt): y Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 1 of 16

RUN	DETA	ILS					STRATA	· · · · · · · · · · · · · · · · · · ·	t
Depth	TCR (SCR) RQD	ture	Te.	Reduced		Depth	Desc	ription	Instrument/ Backfill
(Core Ø)	RQD	Fracture Index	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst
16.65 (mm201)	33	SOIL		-9.50		- 16.65 - - - - -	16.65-20.40m soil. 16.65m J46 16.65m B47	Firm to stiff dark grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes siltstone, limestone and mudstone. (Tidal Flat/Glacial Deposits).  16.65m clay is of intermediate plasticity.	
17.60									
(102mm)	0					- (2.25) -			
18.10	63					-			
(102mm)	33					-			
18.90	100			-11.75	-	18.90	18.90m J48	Stiff light red brown slightly sandy	
19.40 (105mm)	70					-	18.90m B49	slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Glacial Till).	
(102mm)						- (1.50) - - - - - - -	19.40m B51	18.90m clay is of low to intermediate plasticity.	
20.40	100 (0) 0	NI		-13.25		20.40	20.40-23.00m non-intact.		

Drilling	Progress and	l Water Obser	vations	Stand	ard Pene	tration Test		Flush		Ge	neral
Date	Depth	Casing	Wate Standir		Туре	Result	From - To	Туре	Returns (%)	Rer	narks
11/06/2021	16.65	16.65	4.11	17.60 18.90	S S	N4 N25	16.65 - 17.60 17.60 - 18.10 18.10 - 18.90 18.90 - 19.40 19.40 - 20.40 20.40 - 21.70	Water Water Water Water Water	100 100 100 100 100 100	(1) Description derived fi Inspection pit dug prior to installation: 1 No. 50mm standpipe and 1 No. 25n standpipe installed betw 30.70-34.50m BGL resp out as per the Client inst protection installed betw prior to commencing rota	diameter slotted nm diameter slotted een 18.20-20.50m and ectively. (4) UXO carried ructions. (5) Aquifer een 14.90-16.65m BGL
	nensions ii Scale 1:25					tion of syr ns see Ke	nbols and by Sheets	Chec	ked by:	Logged by: G.T/R.C/D.P	Contract No. <b>4339</b>

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RC

Tel: 0191 387 4700 Fax: 0191 387 4710

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### DRILLHOLE RECORD

**FINAL** 

Status:-

Project:	Preliminary Onshore Ground	Investigation	for NZT		Expl	oratory Hole No.
Client:	AECOM		-west of Redcar, North ` ::457207.512 N:525257			MS\BH12
Method (Equ Sonic/F	uipment): Rotary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet:	2 of 16

RUN	I DETA	AILS					STRATA		int/
Depth	TCR	ture	ter	Reduced		Depth		ription	Instrument/ Backfill
(Core Ø)	TCR (SCR) RQD	Fracture	Water	Level	Legend	(Thickness)	Discontinuity Detail	Main	lnst B
(102mm)						- - - - - (1.80)		Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Recovered as very stiff clay). (Redcar Mudstone Formation). (continued)	
21.70	100 (0) 0			-15.05		- - - - - - - 22.20		Extremely weak thinly laminated dark	
(102mm)		12					23.00-25.00m horizontal to subhorizontal (0-15	grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
23.50 (EEE SQ) 24.00	100 (0) 0					- - - (2.70) - -	degrees) closely spaced planar to undulating smooth tight to partly open clean and infilled (clayey gravel) discontinuities.		
(102mm)	100 (42) 0					-			

Drilling	g Progress and	d Water Obser	vations	Standa	ard Pene	tration Test		Flush		Ge	neral
Date	Depth	Casing	Water Standing		Туре	Result	From - To	Туре	Returns (%)	Rer	marks
11/06/2021 14/06/2021	24.00 24.00	24.00 24.00	0.00 4.09				21.70 - 22.00 22.00 - 23.50 23.50 - 24.00 24.00 - 25.20	Water Water Water Water	100 100 100 100	(1) Description derived finspection pit dug prior to installation: 1 No. 50mm standpipe and 1 No. 25r standpipe installed betw 30.70-34.50m BGL respout as per the Client inst protection installed betw prior to commencing rotal.	diameter slotted nm diameter slotted een 18.20-20.50m and ectively. (4) UXO carried ructions. (5) Aquifer een 14.90-16.65m BGL
	nensions ii Scale 1:25					tion of syn	nbols and y Sheets	Chec	ked by: .W.	Logged by: G.T/R.C/D.P	Contract No. 4339

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

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### **DRILLHOLE RECORD**

Project:	Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
Client:	AECOM		-west of Redcar, North E:457207.512 N:52525		MS\BH12
Method (Equip Sonic/Ro	ment): otary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 3 of 16

							,					
RUN	DETA				I			STRATA				
Depth	TCR (SCR)	Fracture	ater	Reduced	Legend	Depth		Descr	iption			Instrument/
& (Core Ø)	(SCR) RQD	Frac	Water	Level	Legend	(Thickness)	Discontinuity D	etail		Mair	1	Inst
				-17.75		- 24.90						
				17.70		24.00			Very we	ak thinly lam	inated dark grey	
		10				(0.30)	25.00-25.20m subhorizontal (5 closely spaced planar to undulating	-25 degrees) very	MUDST (Redcar	ONE partiall  Mudstone F	y weathered.	
25.20	100	4	-	-18.05		25.20	infilled (clay) discontinuities.		·			_{///
	(93) 60	4				_	25.20-26.30m subhorizontal (5 spaced planar to undulating open	-25 degrees) closely and tight infilled	MUDST	ninly laminate ONE partiall	v weathered with	
	60						(clay) discontinuities.		occasio	nal fossilised	remains	
						_				n in size). · Mudstone F	ormation).	
						-			`		,	
						_						
Ê												
(102mm)						_						
Ξ						-						
						-						
		15	-			-	26.30-26.70m subhorizontal (5	-25 degrees) and				
						_	subvertical (65-85 degrees) close spaced planar to undulating open	ly to very closely				
						_	(clay) discontinuities.					
26.70						(3.00)						
	100 (87)	6					26.70-28.20m subvertical (65-8 closely spaced planar to undulating	35 degrees) very				
	`70 <sup>′</sup>					_	infilled (clay) discontinuities.	.9 -p9				
						_						
						-						
						_						
(102mm)						_						
(10						-						
						-						
						L						
						-						
28.20	100	11	-	-21.05		28.20	28.20-29.50m oblique (25-65 d	legrees) and	Weak o	rev fossilifer	ous MUDSTONE	-\//
	(85) 38					-	subhorizontal (5-25 degrees) ver planar to undulating open and tig	y closely spaced	partially	weathered.		
						-	discontinuities.	` "	(Redcar	Mudstone F	ormation).	<i>\///.</i>
						-						

Drillin	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test		Flush		General Remarks		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)			
							25.20 - 26.70 26.70 - 28.20 28.20 - 29.50	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2 Inspection pit dug prior to drilling. (3) Double installation: 1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.		
	All dimensions in metres Scale 1:25.00				tion of syr ns see Ke	nbols and y Sheets Checked by		ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339		

Tel: 0191 387 4700 Fax: 0191 387 4710

Status:-

	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4 Tel: 01772 735
		DRILLHOLE RECORD	
Project:			

<b>(</b>	DRIL	FINAL							
Project:	Project: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM	MS\BH12							
Method (Equip Sonic/Ro	oment): otary Coring (Boart Longyear LS250/Comacchio G	EO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 4 of 16				

DIIN	DETA	VII C	Ι				STRATA			
Depth	TCR							cription		Instrument/ Backfill
& (Core Ø)	(SCR) RQD	Fracture	Water	Reduced Level	Legend	Depth (Thickness)		Mai		nstru Bac
(102mm)	T T T T T T T T T T T T T T T T T T T	ш				 (1.30) 	Discontinuity Detail	Weak grey fossilifer partially weathered. (Redcar Mudstone F (continued)	ous MUDSTONE	
29.50				-22.35		- - - - 29.50	1			
(102mm)	93 (93) 50	NR 6				-	29.50-29.55m no recovery. 29.55-31.20m subhorizontal (10-20 degrees) closely spaced planar and irregular rough undulating smooth and rough tight clean discontinuities.	Weak to moderately black grey black fos MUDSTONE partiall (Redcar Mudstone F	siliferous y weathered.	
30.20	100 (100) 80					- - -				
(102mm)						- - -				
31.20 (mm201)	100 (80) 40	NI 8				- - -	31.20-31.30m non-intact. 31.30-32.45m subhorizontal (10-20 degrees) closely spaced planar and irregular rough undulating smooth and rough tight clean discontinuities.	,		
51.70	77 (57) 33					- - - -				
(102mm)		NR				- - - -(6.20)	32.45-32.70m no recovery.			

Drilling	Drilling Progress and Water Observations			Stand	Standard Penetration Test			Flush		General		
Date	Depth	Casing	Wate Standi		Туре	Result	From - To	Туре	Returns (%)	Remarks		
14/06/2021	29.50	29.50	2.19	11			29.50 - 30.20	Water	100	(1) Description derived from drillers daily report. (2 Inspection pit dug prior to drilling. (3) Double installation: 1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted		
16/06/2021	29.50	29.50	5.19	9			30.20 - 31.20 31.20 - 31.70	Water Water	100 100			
							31.70 - 33.20	Water	100	standpipe and 1 No. 25mm diameter slotted standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.		
	nensions ii Scale 1:25					tion of syn	nbols and y Sheets	L	ked by:	Logged by: G.T/R.C/D.P	Contract No. 4339	

25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL

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**AECOM** 

Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)

Project:

Client:

### Status:-**DRILLHOLE RECORD FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\BH12 E:457207.512 N:525257.781 | Ground Level (m): 7.147 | St Start Date: 03/06/2021

RUN DETAILS  Depth (Core Ø) RQD TAILS  NI NI 6  Reduced Level Legend Thickness)  NI NI 6  Reduced Level Legend Thickness)  32.70-33.00m non-intact.  32.70-33.00m non-intact.  33.00-35.70m subhorizontal (10-20 degrees) closely	
NI Salari	
NI Salari	
NI Weak to moderately black grey black fos MUDSTONE partial (Redcar Mudstone for moderately black grey black)	
	/ weak dark grey siliferous ly weathered. Formation).
	siliferous 0
	Ty weatnered.
spaced planar and irregular rough undulating smooth	000
and rough tight clean discontinuities.	00
100 (100) 70	00
	ro ₽
	0 0
	109
(102 mm)	,
	00
	0 ∧   <del> </del>
	00 =
34.20	
(100) 82	
	0 0 0
(102mm)	
35.30	
100 (100)	
-28.55 35.70	
Complete at 35.70m	BGL.

Drilling	Drilling Progress and Water Observations			Standard Penetration Test				Flush		General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
16/06/2021 17/06/2021 17/06/2021	33.20 33.20 35.70	33.20 33.20 35.70	5.19 4.67 4.67				33.20 - 34.20 34.20 - 35.30 35.30 - 35.70	Water Water Water	100 100 100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 1 No. 50mm diameter slotted standpipe and 1 No. 25mm diameter slotted standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.		
All dim	nensions i	n metres		For e	kolana	tion of syr	nbols and	Chec	ked by:			

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781								
Method (Equipment): Sonic/Rotary	Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 6 of 16				

# Figure MS\BH12.1 MS\BH12 0.12-1.20m BGL



## Figure MS\BH12.2 MS\BH12 1.20-2.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT									
Client:	ent: AECOM Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781									
Method (Equipment): Sonic/Rotary (	Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 7 of 16					

# Figure MS\BH12.3 MS\BH12 2.70-4.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH12 Sample: 2.70-4.20m BGL

# Figure MS\BH12.4 MS\BH12 4.20-5.70m BGL



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### Status:-**DRILLHOLE RECORD FINAL**

Project: Preliminary Onshore Ground I	Exploratory Hole No.		
Client: AECOM	st of Redcar, North Yor 7207.512 N:525257.78	MS\BH12	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio Gl	und Level (m): 7.147	Start Date: 03/06/2021	Sheet: 8 of 16

# Figure MS\BH12.5 MS\BH12 5.70-7.20m BGL



# Figure MS\BH12.6 MS\BH12 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground		Exploratory Hole No.								
Client: AECOM		-west of Redcar, North Yo ::457207.512 N:525257.78		MS\BH12						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 9 of 16						

# Figure MS\BH12.7 MS\BH12 8.70-10.20m BGL



# Figure MS\BH12.8 MS\BH12 10.20-11.70m BGL



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## **DRILLHOLE RECORD**

**FINAL** 

Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\BH12 **AECOM** E:457207.512 N:525257.781 Start Date: 03/06/2021 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) Ground Level (m): 7.147 10 of 16

# Figure MS\BH12.9 MS\BH12 11.70-13.20m BGL



## Figure MS\BH12.10 MS\BH12 13.20-14.70m BGL



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### **DRILLHOLE RECORD**

Status:- FINAL

Project:	Exploratory Hole No.										
Client:	AECOM		-west of Redcar, North Yo ::457207.512 N:525257.78	MS\BH12							
Method (Equipment) Sonic/Rotary	): Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 11 of 16						



### Figure MS\BH12.12 MS\BH12 19.40-21.40m BGL



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### **DRILLHOLE RECORD**

Status:-

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North ` ::457207.512 N:525257	MS\BH12							
Method (Equipmer Sonic/Rotar	ոt)։ ry Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 12 of 16						





Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 390 Fax: 01772 735 399

### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North ` ::457207.512 N:525257	MS\BH12							
Method (Equipment): Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 13 of 16						

## Figure MS\BH12.15 MS\BH12 24.00-25.20m BGL



# Figure MS\BH12.16 MS\BH12 25.20-26.70m BGL



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### **DRILLHOLE RECORD**

Status:-

**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.		
Client: AECOM	-west of Redcar, North Yourself:457207.512 N:525257.7	MS\BH12	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio (	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 14 of 16





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Tel: 0191 387 4700 Fax: 0191 387 4710

### **DRILLHOLE RECORD**

FINAL

Project:	oject: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM		-west of Redcar, North Y ::457207.512 N:525257.	MS\BH12							
Method (Equipment): Sonic/Rotary	: Coring (Boart Longyear LS250/Comacchio G		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 15 of 16						

### Figure MS\BH12.19 MS\BH12 29.50-31.20m BGL



### Figure MS\BH12.20 MS\BH12 31.20-32.25m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\BH12 **AECOM** E:457207.512 N:525257.781 Start Date: Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205) 03/06/2021 16 of 16

# Figure MS\BH12.21 MS\BH12 32.25-34.20m BGL ROCK CORE PHOTOGRAPHIC BOARD Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH12 Sample: 32.25-34.20m BGL a..@..a..a..a..a..a..a..



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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	roject: Preliminary Onshore Ground Investigation for NZT										
Client: AECOM	Location: North-west of Redcar, North York: E:456773.892 N:525178.376		MS\BH13								
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Start Date: 25/06/2021	Sheet: 1 of 2								

SAMPLES & TESTS				STRATA								
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/				
				5.56		- 0.15	(1) MADE GROUND (Black ash and soil).	P				
0.15-1.20 0.15-1.20 0.30 0.30 0.50 0.50 0.50	$\begin{array}{c} \text{SL1}_{(\text{SS})} \\ \text{B7}_{(\text{SL1})} \\ \text{ES1}_{(\text{SL1})} \\ \text{PID} \\ \text{ES2}_{(\text{SL1})} \\ \text{J8}_{(\text{SL1})} \\ \text{PID} \end{array}$	0.1ppm <0.1ppm				(1.05)	MADE GROUND (Brown black very sandy gravel and cobbles with low cobble content. Gravel is fine to coarse angular to subrounded and includes grey to dark grey slag. Cobbles are subangular to subrounded and include slag. Slag is 100%).	00 . V				
1.00	ES3 <sub>(SL1)</sub>	-0. гррпп		4.51	$\bowtie$	1.20						
1.00 1.00 1.20-2.70 1.20-1.95	J9 <sub>(SL1)</sub> PID SL2 <sub>(SS)</sub> B10 <sub>(SL2)</sub>	<0.1ppm					MADE GROUND (Medium dense grey brown slightly clayey sand and gravel. Gravel is fine to coarse angular to rounded and includes slag. Slag is 100%).					
1.20 1.50	J11 <sub>(SL2)</sub>	N28			$\bowtie$	£						
1.50 1.50 1.95-2.70 2.00 2.00	B12 <sub>(SL2)</sub> ES4 <sub>(SL2)</sub>	<0.1ppm				<u>(</u> 1.50)	between c.1.90-2.70m BGL clayey.					
2.00	J13 <sub>(SL2)</sub>	<0.1ppm			$\bowtie$	{						
2.50 2.50 2.70 <b>-</b> 4.20	J14 <sub>(SL2)</sub> PID	<0.1ppm		3.01		2.70	MADE GROUND (Soft red brown sandy gravelly clay with low					
2.70-3.65	SL3 <sub>(SS)</sub> B15 <sub>(SL3)</sub>					<u> </u>	cobble content. Gravel is fine to coarse angular to subrounded and includes grey slag. Slag is vesicular (100%). Cobbles are					
2.70 3.00	FS5	N9			$\bowtie$	(0.95)	subrounded and include slag).					
3.00	J16 <sub>(SL3)</sub>				$\bowtie$	£	at c.3.00m BGL clay is of intermediate plasticity.					
3.00 3.60	PID ES6 <sub>(SL3)</sub>	<0.1ppm		2.06	$\bowtie$	3.65	MARE OROUND (Red block and a site of the site below to	-88 8				
3.60 3.65-4.20	B17 <sub>(SL3)</sub>	<0.1ppm				(0.55)	MADE GROUND (Dark blue brown sand with mild hydrocarbon odour. Sand is fine to coarse).					
4.00 4.00	J18 <sub>(SL3)</sub> PID	<0.1ppm		1.51	$\bowtie$	4.20						
1.20-5.70	SL4 <sub>(SS)</sub>	vo. ippiii				<u> </u>	Soft brown black slightly organic slightly sandy CLAY with					
4.20-4.80 4.20	B19 <sub>(SL4)</sub>	N4				<u> </u>	occasional fragments of white shell. Mild organic odour. (Tidal Flat Deposits).					
4.50	J20 <sub>(SL4)</sub>					<u> </u>	at c.4.20m BGL clay is of high plasticity.					
4.80-5.70	B21 <sub>(SL4)</sub>				<del></del>	Ł I	between c.4.80-5.70m BGL black brown.					
5.00 5.00	J22 <sub>(SL4)</sub> PID	<0.1ppm				(1.85)						
						‡						
5.50	J23 <sub>(SL4)</sub>					ļ						
5.70-6.15	UT1					F	at c.5.70m BGL low strength. Clay is of intermediate plasticity.	0				
5.70-7.20 5.70-6.05	SL5 <sub>(SS)</sub> B24 <sub>(SL5)</sub>			-0.34		6.05	between c.5.70-6.05m BGL brown.	_0				
6.00 6.05-7.20	B24 <sub>(SL5)</sub> PID	<0.1ppm			<u>├</u>	<u> </u>	Brown clayey SAND. Sand is fine to coarse. (Engineer notes slightly saturated).	0				
J.UU-1 .ZU	B26 <sub>(SL5)</sub>				<u> </u>	<u> </u>	(Tidal Flat Deposits).					
5.50	J25 <sub>(SL5)</sub>					(1.15)						
					<u> </u>	ļ		ľ				
7.00	PID	<0.1ppm		-1.49	L	7.20						
7.20-8.70	SL6 <sub>(SS)</sub>				× :		Medium dense to dense yellow brown very silty SAND with					
7.20-7.95 7.20	B27 <sub>(SL6)</sub>	N33			×	F	occasional fragments of bivalve shell.					
7.50	J28 <sub>(SL6)</sub>				^ . · .× . ·	ļ	(Tidal Flat Deposits).					
	1		1	1	·	t l		ᇈద				

Borin	Boring Progress and Water Observations				L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
25/06/2021 25/06/2021 28/06/2021	0.00 5.70 5.70	0.00 5.70 5.70	178 178 178 178	5.00 4.00	0.15 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178 178	76 100 100 100 67 100	Yes Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-9.50m and 17.00-20.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed prior to commencing rotary drilling.

All dimensions in metres Scale 1:50.00		nation of sy tions see K		Checked by:	Logged by: M.B/R.C	Contract No. 4339

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

### SONIC SAMPLE HOLE RECORD

		I <u>L</u>	
Project: Preliminary Onshore Ground I	Investigation for NZT		Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North Yorksh E:456773.892 N:525178.376	hire	MS\BH13
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		art Date: \$25/06/2021	Sheet: 2 of 2

SAMP	LES & TI	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.95-8.70 8.00 8.00	B29 <sub>(SL6)</sub> J30 <sub>(SL6)</sub> PID	<0.1ppm			×	-	Medium dense to dense yellow brown very silty SAND with occasional fragments of bivalve shell. (Tidal Flat Deposits). (continued)		
8.50 8.70-10.20 8.70-10.20 8.70 9.00	J31 <sub>(SL6)</sub> SL7 <sub>(SS)</sub> B32 <sub>(SL7)</sub> S PID	N24 <0.1ppm			×	- - (3.30) - - - -			
9.50	J33 <sub>(SL7)</sub>				×	- - - - - - -			
10.20-11.70 10.20-10.40 10.20 10.20 10.50	SL8 <sub>(SS)</sub> ES34 <sub>(SL8)</sub> S PID J39 <sub>(SL8)</sub>	N26 <0.1ppm		-4.79 -5.19	×	- - 10.50 - (0.40) - 10.90	Brown very clayey SAND with occasional pockets of soft brown very sandy clay. Sand is fine to coarse. (Tidal Flat Deposits).		
11.00-11.20 11.00 I 11.00 11.20-11.70 11.50	ES35 <sub>(SL8)</sub> ES(M)36 <sub>(SL</sub> PID B38 <sub>(SL8)</sub> J37 <sub>(SL8)</sub>	<sup>8)</sup> <0.1ppm		-5.99	× × - × - × - × - × - × - × - × - × - ×	(0.80)	Stiff thinly laminated red brown silty CLAY. (Glacial Deposits).  at c.11.50m BGL clay is of high plasticity.		
11.70-12.15	UT2						Boring complete at 11.70m BGL - continued by rotary drilling.		
						- - - - - - - - - - - - - - - - - - -			

Borin	Boring Progress and Water Observations					iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
28/06/2021	11.70	11.70	178	5.00	8.70 - 10.20 10.20 - 11.70	178 178	47 100	Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-9.50m and 17.00-20.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed prior to commencing rotary drilling.

All dimensions in metres Scale 1:50.00		nation of sy tions see K		Checked by:	Logged by: M.B/R.C	Contract No. 4339

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### **DRILLHOLE RECORD**

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explo	ratory Hole No.
Client: AE	СОМ		-west of Redcar, North Yor E:456773.892 N:525178.37	ľ	MS\BH13	
Method (Equipment): Sonic/Rotary Co	ring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet:	1 of 10

RUN DETAILS STRATA									Τ.		
Depth	TCR							Descrip	ation		Instrument/ Backfill
& (Core Ø)	(SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity D		Main		Instru
11.70	70	SOIL		-5.99		11.70	11.70-15.30m soil.		Stiff dark brown slight gravelly CLAY. Sand Gravel is fine to medi subangular and include	tly sandy slightly is fine to coarse.	
(102mm)						- - - -			mudstone, sandstone (Glacial Till). 11.70m clay is of h	e and limestone.	
12.70	100					- - - (2.50) -	12.80m J42 12.80m B43 12.80m E44 12.80m ES(M)45 12.80m U46		12.80m high streng intermediate plasticity		
(102mm)						- - - - -					
4.20	97 (0) 0			-8.49	X X X X X X X X X X X X X X X X X X X	14.20 - (0.50) - 14.70	14.20m B48 14.30m J47		Stiff thinly laminated s slightly sandy CLAY. coarse. (Glacial Till).		
(102mm)				-9.59		- - -(0.60) - - 15.30	14.70m U49		Stiff dark brown sligh gravelly CLAY. Sand Gravel is fine to medi subangular and inclu- sandstone, limestone (Glacial Till). 14.70m clay is of ir plasticity.	is fine to coarse. tum angular to des mudstone, and coal.	
5.70		NI		-9.99		- .(0.40) - 15.70	15.30m E50 15.30-15.70m non-intact. Rec	overed as clay.	Extremely weak thinly grey MUDSTONE res (Recovered as stiff cl (Redcar Mudstone Fo	sidual. ay).	

Drilling Progress and Water Observations			Standa	ard Pene	tration Test		Flush		General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
29/06/2021	11.70	11.70	5.00	14.20	S	N18	11.70 - 18.20	Water	100	(1) Description derived from drillers daily report (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-9.50r and 17.00-20.00m BGL. (4) UXO carried out as per the Client instructior (5) Aquifer protection installed prior to commen rotary drilling.		
All dimensions in metres Scale 1:25.00					tion of syn	nbols and Checked by: y Sheets K, W.		ked by: W.	Logged by: M.B/R.C	Contract No. 4339		

Head Office: Regional Office Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2R0

Tel: 0191 387 4700 Fax: 0191 387 4710

<b>  Table</b>

### **DRILLHOLE RECORD**

Project: Preliminary Onshore Ground	I Investigation	for NZT		Explo	oratory Hole No.
Client: AECOM		i-west of Redcar, North You E:456773.892 N:525178.37			MS\BH13
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet:	2 of 10

RUN	DETA	AILS			STRATA								
Depth &	TCR	Fracture	Water	Reduced	Legend	Depth		ription	Instrument/ Backfill				
(Core Ø)	(SCR) RQD	Frac	N N	Level	Legena	(Thickness)	Discontinuity Detail	Main					
	87 (0) 0	NR NI				- -	15.70-15.90m no recovery. 15.90-16.20m non-intact.	Very weak thinly laminated grey MUDSTONE partially to distinctly weathered. (continued)					
(102mm)		15					16.20-17.20m horizontal (0-5 degrees) to vertical (85-90 degrees) very closely spaced planar to undulating smooth to rough open and tight clean and infilled (gravel) discontinuities with some clayey gravel on surface of core.						
17.20 (mm201)	100 (38) 0	12				-	17.20-18.20m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely to very closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.						
18.20 (mm201)	100 (45) 0	NI 12 9				(4.50) - - - - - - - - - - - - - - - - - - -	17.95-18.05m non-intact.  18.05-18.20m horizontal (0-5 degrees) to vertical (85-90 degrees) very closely spaced planar to undulating smooth to rough open and tight clean and infilled (gravel) discontinuities with some clayey gravel on surface of core.  18.20-20.20m subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely spaced planar to undulating smooth open and tight clean and infilled (clay) discontinuities.						

Drilling	Drilling Progress and Water Observations			Standard Penetration Test				Flush		General	
Date	Depth	Casing	Wat Stand	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks
29/06/2021 30/06/2021	18.20 18.20	18.20 18.20	5.0 6.0	 17.20	С	50/30mm	18.20 - 20.20	Water	100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 6.50-9.50m and 17.00-20.00m BGL. (4) UXO carried out as per the Client instruction: (5) Aquifer protection installed prior to commenc rotary drilling.	
All dimensions in metres Scale 1:25.00				tion of syn ns see Ke	nbols and y Sheets	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: M.B/R.C	Contract No. 4339		

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Status:-	
	<b>FINAL</b>

Project:	Exploratory Hole No.		e No.							
Client:		AECOM				-west of Redcar, North ::456773.892 N:52517	-	MS\BH13		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)						Ground Level (m): Start Date: 25/06/2021				
RUN DETAILS		STRATA								nent/ kfill
						≝ €				

RUN	I DETA	ILS					STRATA		_ if_
Depth	TCR	ture	ter	Reduced		Depth	Desc	ription	Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	Inst
				-14.49		- - - - 20.20		Very weak thinly laminated grey MUDSTONE partially to distinctly weathered. (continued)	
								Complete at 20.20m BGL.	
						- - -			

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test				General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Rer	marks	
30/06/2021	20.20	20.20	6.00							(2) Inspection pit dug pri (3) Double installation: 2 slotted standpipes install and 17.00-20.00m BGL. (4) UXO carried out as p	No. 50mm diameter led between 6.50-9.50m	
All dimensions in metres		For explanation of symbols and				\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: M.B/R.C	Contract No. 4339			

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project:	Preliminary Onshore Ground		Exploratory Hole No.	
Client:	AECOM	-west of Redcar, North Yo ::456773.892 N:525178.3		MS\BH13
Method (Equi	pment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 4 of 10

# Figure MS\BH13.1 MS\BH13 0.15-1.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 0.15-1.20m BGL มที่สามาเก็บสามากับสามารถสามารถสามา

# Figure MS\BH13.2 MS\BH13 1.20-2.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 1.20-2.70m BGL เก็บไดยเกล่าของเกิดเก็บเก็บแบบเกิดเกิดเก็บเก็บ

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### **DRILLHOLE RECORD**

**FINAL** 

Project:	Preliminary Onshore Ground	Exploi	ratory Hole No.		
Client:	AECOM	-west of Redcar, North Yo ::456773.892 N:525178.3		N	MS\BH13
Method (I	Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet:	5 of 10

# Figure MS\BH13.3 MS\BH13 2.70-4.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 2.70-4.20m BGL 里···高··里··高··里··高··里··高··里··高··里··商··里··商··里··

# Figure MS\BH13.4 MS\BH13 4.20-5.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 4.20-5.70m BGL

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### **DRILLHOLE RECORD**

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Y ::456773.892 N:525178.3	MS\BH13				
Method (Equip	ment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 6 of 10			

# Figure MS\BH13.5 MS\BH13 5.70-7.20m BGL



## Figure MS\BH13.6 MS\BH13 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Pro	ject: Preliminary Onshore Ground		Explo	oratory Hole No.	
Cli	nt: AECOM	-west of Redcar, North Yo ::456773.892 N:525178.3			MS\BH13
Me	hod (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet:	7 of 10



# Figure MS\BH13.8 MS\BH13 10.20-11.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 10.20-11.70m BGL

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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project	et: Preliminary Onshore Ground	Exploratory Hole No.		
Client:	: AECOM	-west of Redcar, North Yo ::456773.892 N:525178.3		MS\BH13
Method	od (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 8 of 10



# Figure MS\BH13.10 MS\BH13 12.70-14.20m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Pr	Project: Preliminary Onshore Ground Investigation for NZT	Exploratory Hole No.				
CI		ocation: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376				
Me	lethod (Equipment): Sonic/Rotary Coring (Boart Longyear LS250) Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 9 of 10			



# Figure MS\BH13.12 MS\BH13 15.70-17.20m BGL



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### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground	Exploratory Hole No.						
Client: AECOM							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	•	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 10 of 10			

# Figure MS\BH13.13 MS\BH13 17.20-18.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 17.20-18.20m BGL

# Figure MS\BH13.14 MS\BH13 18.20-20.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH13 Sample: 18.20-20.20m BGL T. S. D. S. D. S.

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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Investigation	for NZT		Expl	loratory Hole No.
Client: AECOM		-west of Redcar, North Yo ::457078.825 N:525022.2		MS\BH14	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet:	1 of 2

SAMPI	LES & TE	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
0.10-1.20 0.10-1.20 0.30 0.30 0.50 0.50 0.50	SL1 <sub>(SS)</sub> B4 <sub>(SL1)</sub> ES1 <sub>(SL1)</sub> PID ES2 <sub>(SL1)</sub> J5 <sub>(SL1)</sub> PID ES3 <sub>(SL1)</sub>	<0.1ppm		5.99		(1.20)	MADE GROUND (Grey brown very gravelly sand with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag. Slag is vesicular (100%). Cobbles are subrounded and include slag).		00000000000000000000000000000000000000
1.00 1.20-2.70 1.20-1.95 1.20 1.50 1.50 1.95-2.70 2.00 2.00 2.50 2.50 2.70-4.20 2.70-3.55	PID SL2(SS) B6(SL2) S J7(SL2) PID B8(SL2) PID J9(SL2) ES9A(SL2) J10(SL2) PID SL3(SS) B11(SL3)	<0.1ppm N26 <0.1ppm <0.1ppm				(2.35)	MADE GROUND (Medium dense black silty very sandy gravel with medium cobble content. Sand is fine to coarse and includes ash and slag. Gravel is fine to coarse angular to subangular and includes slag and clinker. Slag is vesicular (25-50%). Cobbles are subangular and include slag. Slag is vesicular). between c.1.20-3.55m BGL occasional orange staining on slag.		
2.70 3.00 3.00 3.00 3.50 3.55-4.20 4.00 4.00	S PID J12 <sub>(SL3)</sub> ES12A <sub>(SL3)</sub> J13 <sub>(SL3)</sub> B14 <sub>(SL3)</sub>	N15 <0.1ppm		3.64		3.55 (0.65) — 4.20	MADE GROUND (Blue grey black very sandy gravel with high cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag. Slag is vesicular (100%). Cobbles are subangular to subrounded and include slag. Slag is vesicular).		288488888888
4.20 4.20-5.70 4.20-4.40 4.20 4.50 4.50 4.50-4.80 5.00 5.00-5.70	$\begin{array}{c} \text{PID} \\ \text{SL4}_{(\text{SS})} \\ \text{ES16}_{(\text{SL4})} \\ \text{S} \\ \text{PID} \\ \text{J17}_{(\text{SL4})} \\ \text{ES18}_{(\text{SL4})} \\ \text{J19}_{(\text{SL4})} \\ \text{B20}_{(\text{SL4})} \end{array}$	1.0ppm N19 <0.1ppm		2.79 2.69	×	4.40 4.50	MADE GROUND (Black sand and gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes slag. Mild to moderate hydrocarbon odour noted). (Slightly saturated). Black pseudofibrous PEAT.  Medium dense black brown silty SAND with occasional fragments of shell. Mild organic odour (Tidal Flat Deposits).		4 7
5.50 5.70-7.20 5.70-6.45 5.70 6.00 6.00 6.45-7.20 6.50	J21 <sub>(SL4)</sub> SL5 <sub>(SS)</sub> B22 <sub>(SL5)</sub> S J23 <sub>(SL5)</sub> PID B24 <sub>(SL5)</sub> J25 <sub>(SL5)</sub>	N12 <0.1ppm				- - - - - - - - - - - - - - - - - - -	at c.4.50m BGL sandy slightly gravelly silt of intermediate plasticity. between c.4.50-5.30m BGL occasional pockets of soft black silt.		47 47
7.00 7.00 7.20-8.70 7.20-7.95 7.20 7.50	J26 <sub>(SL5)</sub> PID SL6 <sub>(SS)</sub> B27 <sub>(SL6)</sub> S J28 <sub>(SL6)</sub>	<0.1ppm N15			×	- - - - - - - -			4 2 4

Borin	Boring Progress and Water Observations					iner Sample	Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
28/06/2021 28/06/2021 29/06/2021	0.00 1.20 1.20	0.00 0.00 0.00	178 178 178	Dry	0.10 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178 178	100 100 100 100 100 100	Yes Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 5.00-8.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed prior to commencing rotary drilling.

All dimensions in metres Scale 1:50.00	' .	nation of sy tions see K		Checked by: K.W.	Logged by: M. Bell	Contract No. 4339

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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground I	Preliminary Onshore Ground Investigation for NZT									
Client: AECOM										
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet:	2 of 2					

SAMPI	ES & T	ESTS					STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill		
7.95-8.70 8.00 8.00	B29 <sub>(SL6)</sub> J30 <sub>(SL6)</sub> PID	<0.1ppm			·× · . · . · . · . · . · . · . · . · . ·	- - - - -	Medium dense black brown silty SAND with occasional fragments of shell. Mild organic odour (Tidal Flat Deposits). (continued)			
8.50	J31 <sub>(SL6)</sub>			-1.51	· . · .× . · . · . · .	8.70				
8.70-10.20 8.70-9.45 8.70 9.00 9.00	SL7 <sub>(SS)</sub> B32 <sub>(SL7)</sub> S J33 <sub>(SL7)</sub> PID	N25 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - - - - - -(1.50)	Medium dense yellow brown silty SAND with pockets of soft brown silty clay. (Tidal Flat Deposits).			
9.45-10.20 9.50	B34 <sub>(SL7)</sub> J35 <sub>(SL7)</sub>				· · · · × · · · · · · · · · · · · · · ·	.[(1.30) - - - -				
10.00 10.00 10.20-11.70 10.20-10.95 10.20	J36 <sub>(SL7)</sub> PID SL8 <sub>(SS)</sub> B37 <sub>(SL8)</sub> S	<0.1ppm N2		-3.01	· . · . × .	10.20	Very loose yellow brown SAND. Sand is fine to coarse. (Tidal Flat Deposits).			
10.50 10.95-11.40 11.00 11.00	J38 <sub>(SL8)</sub> B39 <sub>(SL8)</sub> J40 <sub>(SL8)</sub> PID	<0.1ppm				(1.20) 				
11.50	J41 <sub>(SL8)</sub>	о. гррпп		-4.21		11.40	Medium dense yellow brown silty SAND with occasional pockets of soft brown silty clay and fragments of shell. Sand is fine to			
11.70-13.20 11.70-12.45 11.70 12.00	SL9 <sub>(SS)</sub> B42 <sub>(SL9)</sub> S J43 <sub>(SL9)</sub> PID	N23			× · · · · · · · · · · · · · · · · · · ·	   .(1.60)	coarse. (Tidal Flat Deposits).			
12.00 12.45-12.65	ES44 <sub>(SL9)</sub>	<0.1ppm			× · . · .	 - - - -				
12.45 12.50	J45 <sub>(SL9)</sub>	<0.1ppm		-5.81	×	- - 13.00				
13.00	J46 <sub>(SL9)</sub>			-6.01		13.20	Soft dark brown very sandy CLAY. (Tidal Flat Deposits).			
13.20 13.20	UT*B1 PID	(15) <0.1ppm					Boring complete at 13.20m BGL - continued by rotary drilling.			
						-				

Borin	g Progres	s and Wat	er Observa	itions	Liner Sample Information				General
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
29/06/2021	13.20	13.20	178	8.70	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20	178 178 178	100 100 100	Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 5.00-8.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed prior to commencing rotary drilling.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M. Bell	<b>4339</b>

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	Head Office:	Unit 2
	Regional Office:	Unit 2
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# **DRILLHOLE RECORD**

**FINAL** 

Status:-

Project: Preliminary Onshore Ground	Explo	oratory Hole No.			
Client: AECOM	Location: North-west of Re E:457078.82	edcar, North Yor 25 N:525022.22			MS\BH14
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level	(m): 7.191	Start Date: 28/06/2021	Sheet:	1 of 11

RUN	DETA	All S						STRATA			
Depth	TCR		in in	Reduced		Donth		Descrip	ption		Instrument/ Backfill
& (Core Ø)	(SCR) RQD	Fracture	Water	Level	Legend	Depth (Thickness)	Discontinuity D	<u>'</u>	Main		Instr
13.20	100	SOIL		-6.01 -6.36	× × × × × × × × × × × ×	13.20 - (0.35) 13.55	13.20m B47 13.20-17.25m soil.		Soft grey silty CLAY. (Tidal Flat Deposits).		
(102mm)				-6.81		- (0.45) - 14.00	13.55m J48 13.55m B49		Firm brown slightly sa gravelly CLAY. Grave coarse subangular to includes sandstone, r limestone. (Tidal Flat Deposits).	el is fine to subrounded and mudstone and	
(1)						- - - - - -	14.00m B50 14.20m U51 14.20m ES51A		Stiff brown slightly sa gravelly CLAY. Grave coarse subangular to includes sandstone, r limestone. (Tidal Flat Deposits). 14.20m clay is of in	el is fine to subrounded and mudstone and	
14.70	100					- (1.38) - -	14.57m B52		plasticity.		
mn)				-8.19		15.38	15.05m U54 15.38m B55		15.05m very high s of intermediate plastic	city.	
(шидо))	400			-9.01	* * * * * * * * * * * * * * * * * * *	- - (0.82) - - - - 16.20	15.60m J56		lenses of silt and occaremains. (Tidal Flat Deposits). 15.60m clay is of ir plasticity.	asional plant	
	100 (0) 0			-9.18	0	16.37	16.20m J57 16.20m B58 16.20m ES57A		Firm red brown slightly gravelly CLAY. Grave coarse subangular to includes sandstone, I mudstone. (Glacial Ti Stiff red brown slightly stiff red brown slightly grave stiff.)	el is fine to subrounded and imestone and II).	
(102mm)						-(0.88) -	16.62m U59		gravelly CLAY. Grave coarse subangular to includes sandstone, I mudstone. (Glacial Till). 16.62m BGL very h Clay is of low to intern	el is fine to subrounded and imestone and nigh strength.	

Drilling	Progress and	Standa	ard Pene	tration Test		Flush		General			
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks	
01/07/2021	13.20	13.20	3.80	16.20	S	N28	13.20 - 22.20	Water	100	(2) Inspection pit dug pri (3) 50mm diameter slotte between 5.00-8.00m BG (4) UXO carried out as p	ed standpipe installed
	nensions i Scale 1:25					tion of syn	nbols and y Sheets	Checl	ked by: W.	Logged by: M. Bell	Contract No. <b>4339</b>

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### DRILLHOLE RECORD

Project: Preliminary Onshore Ground		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North You E:457078.825 N:525022.22		MS\BH14
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 2 of 11

RUN	DETA	AILS					STRATA	· · · · · · · · · · · · · · · · · · ·	nt/
Depth	TCR (SCR)	Fracture Index	Water	Reduced	Legend	Depth		ription	Instrument/ Backfill
(Core Ø)	(SCR) RQD	Frac	Ms	Level	Ū	(Thickness)	Discontinuity Detail	Main	Ins
		NI		-10.06	0	17.25 - - (0.45)	17.25m B61 17.25-17.70m non-intact. Recovered as clay. 17.50m ES62	plasticity.  Extremely weak grey MUDSTONE residual. (Recovered as gravelly clay. Gravel is fine to coarse angular).	
17.70	100 (77) 7	NI		-10.51 -10.81		17.70 (0.30) 18.00	17.70-18.00m non-intact.	(Redcar Mudstone Formation).  Extremely weak grey MUDSTONE destructured. (Redcar Mudstone Formation).	
(102mm)		30		-11.01 -11.81		(0.20) 18.20 - - - (0.80) - - - 19.00	18.00-19.15m horizontal to vertical (0-90 degrees) extremely to very closely spaced planar to undulating smooth to very tight to tight clean discontinuities.	Very weak thinly to thickly laminated grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). Weak grey MUDSTONE partially weathered with occasional fragments of shell (5-20mm in size). (Redcar Mudstone Formation).	
19.20 (mm20)	100 (70) 29	NI 20		-11.96 -12.01		- 19.15 19.20 	19.15-19.20m non-intact. 19.20-21.50m horizontal to vertical (0-90 degrees) very closely spaced planar very tight to partly open clean discontinuities.	grey MUDSTONE distinctly weathered. \((Redcar Mudstone Formation).\) Extremely weak grey MUDSTONE destructured. \((Redcar Mudstone Formation).\) Weak grey thinly to thickly laminated grey MUDSTONE partially weathered with occasional fragments of shell (5-40mm in size). ((Redcar Mudstone Formation).	
20.70	100 (77) 35					- - - -(3.00) - - -			

Drilling Progress and Water Observations					ard Pene	tration Test	Flush			General		
Date	Depth	Casing	Water Standing	Depth	Туре	Result	From - To	Туре	Returns (%)	Remarks		
										(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 5.00-8.00m BGL. (4) UXO carried out as per the Client instructions. (5) Aquifer protection installed prior to commencing rotary drilling.		
	All dimensions in metres Scale 1:25.00				For explanation of symbols and abbreviations see Key Sheets				ked by:	Logged by: M. Bell	Contract No. 4339	

Status:-

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772
		DRILLHOLE RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

G	DRIL	FINAL					
Project:	roject: Preliminary Onshore Ground Investigation for NZT						
Client:	lient:  AECOM  Location: North-west of Redcar, North Yorkshire E:457078.825 N:525022.226						
Method (Equip	pment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground	d Level (m): 7.191	Start Date: 28/06/2021	Sheet: 3 of 11		

RUN	DETA						STRATA		nt/
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	ter	Reduced	Legend	Depth	Descr	ription	Instrument/ Backfill
(Core Ø)	RQD	Frac	Water	Level	Legend	Depth (Thickness)	Discontinuity Detail	Main	lnst B
(102mm)		NI 12				- - - - -	21.50-21.70m non-intact.  21.70-22.20m horizontal to vertical (0-90 degrees) very closely spaced planar very tight to partly open clean discontinuities.	Weak grey thinly to thickly laminated grey MUDSTONE partially weathered with occasional fragments of shell (5-40mm in size). (Redcar Mudstone Formation). (continued)	
				-15.01		22.20		Commission of 22 22 and DCI	<i>\\\\\\</i>
								Complete at 22.20m BGL.	

Drilling	g Progress and	l Water Obser	vations	Standa	ard Pene	tration Test	### Action Test   Flush   From - To   Type   Returns (%)			General Remarks			
Date	Depth	Casing	Water Standing	Depth	Туре	Result							
01/07/2021	22.20	22.20	3.80						(2) Inspection pit dug pri (3) 50mm diameter slott between 5.00-8.00m BG (4) UXO carried out as p	ed standpipe installed			
	mensions i					tion of syr	nbols and	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ked by:	Logged by: M. Bell	Contract No. 4339		

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Proje	ect: Preliminary Onshore Ground	Exploratory Hole No.		
Clien	nt: AECOM	-west of Redcar, North \ ::457078.825 N:525022	MS\BH14	
Meth	nod (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 4 of 11

## Figure MS\BH14.1 MS\BH14 0.10-1.20m BGL



## Figure MS\BH14.2 MS\BH14 1.20-2.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

Proje	Preliminary Onshore Ground	Exploratory Hole No.		
Clien	at: AECOM	-west of Redcar, North E:457078.825 N:52502	MS\BH14	
Meth	od (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 5 of 11

## Figure MS\BH14.3 MS\BH14 2.70-4.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH14 Sample: 2.70-4.20m BGL

## Figure MS\BH14.4 MS\BH14 4.20-5.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

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Project: Preliminary Onshore Ground I	Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457078.825 N:525022.226	MS\BH14
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): Start Dat 7.191 28/06/	.

## Figure MS\BH14.5 MS\BH14 5.70-7.20m BGL



## Figure MS\BH14.6 MS\BH14 7.20-8.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Groun	Exploratory Hole No.							
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457078.825 N:525022.226							
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 7 of 11				

## Figure MS\BH14.7 MS\BH14 8.70-10.20m BGL



## Figure MS\BH14.8 MS\BH14 10.20-11.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT						
Client:	AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457078.825 N:525022.226					
Method (Ed	iquipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 8 of 11		

#### Figure MS\BH14.9 MS\BH14 11.70-13.20m BGL



#### Figure MS\BH14.10 MS\BH14 13.20-14.70m BGL



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#### **DRILLHOLE RECORD**

Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM		-west of Redcar, North Yor E:457078.825 N:525022.22		MS\BH14	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)			Ground Level (m): 7.191	Start Date: 28/06/2021	Sheet: 9 of 11	

#### Figure MS\BH14.11 MS\BH14 14.70-16.20m BGL



## Figure MS\BH14.12 MS\BH14 16.20-17.70m BGL



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#### **DRILLHOLE RECORD**

**FINAL** 

Project: Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH14 **AECOM** E:457078.825 N:525022.226 Ground Level (m): 7.191 Method (Equipment):
Sonic/Rotary Coring (Boart Longyear LS250) Start Date: 28/06/2021 10 of 11



#### Figure MS\BH14.14 MS\BH14 19.20-20.70m BGL



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### **DRILLHOLE RECORD**

Status:-**FINAL** 

Project: Preliminary Onshore Ground I	Exploratory Hole No.						
Client: AECOM	ECOM Location: North-west of Redcar, North Yorkshire E:457078.825 N:525022.226						
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		rt Date: 8/06/2021	Sheet: 11 of 11				

## Figure MS\BH14.15 MS\BH14 20.70-22.20m BGL



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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Preliminary Onshore Ground	Investigation	for NZT		Explo	ratory Hole No.
Client:	AECOM		-west of Redcar, North Yor E:456595.238 N:524931.81		ľ	MS\BH15
Method (Equipment)	Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet:	1 of 10
			·			

SAMPI	ES & TE	ESTS					STRATA	ent/
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.13-1.20 0.30 0.30 0.50 0.50	SL1 <sub>(SS)</sub> ES1 <sub>(SL1)</sub> PID J2 <sub>(SL1)</sub> ES3 <sub>(SL1)</sub>	<0.1ppm		7.12		(0.65) (0.78	MADE GROUND (Dark grey slag). (Driller notes iron rich).  MADE GROUND (Black clayey sand and gravel. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (100%)).	88 0 0 0 0 88 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0.50 1.00 1.00 1.00	ES4 <sub>(SL1)</sub> J5 <sub>(SL1)</sub> PID	<0.1ppm		6.00		(0.47) - 1.25	MADE GROUND (Grey dark grey slightly gravelly sand with low cobble content. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (100%). Cobbles are subrounded and include slag).	A 3888888888888888888888888888888888888
1.20-2.70 1.20 1.25-2.20 1.50 1.50	SL2 <sub>(SS)</sub> C B6 <sub>(SL2)</sub> J9 <sub>(SL2)</sub> PID	N8 <0.1ppm				(0.95)	MADE GROUND (Firm red brown slightly sandy slightly gravelly clay with low cobble content and cobble sized fragments of metal. Gravel is fine to coarse angular to subrounded and includes slag and brick. Slag is vesicular (50-75%). Cobbles are	4 0
1.80-2.00 1.80 2.00 2.00 2.20-2.70	ES7 <sub>(SL2)</sub> PID ES(M)8 <sub>(SL2)</sub> J11 <sub>(SL2)</sub>	<0.1ppm		5.05		2.20	subangular to angular and include brick and slag).  at c.1.25m BGL clay is of intermediate plasticity.  MADE GROUND (Dense black clayey very sandy gravel with low	
2.50 2.50 2.50 2.70-4.20 2.70-2.90 2.70	B10 <sub>(SL2)</sub> J12 <sub>(SL2)</sub> PID SL3 <sub>(SS)</sub> ES13 <sub>(SL3)</sub>	<0.1ppm		3.95		(1.10)	cobble content. Sand includes ash (50-75%). Gravel is fine to coarse angular to subangular and includes slag and black and yellow clinker. Cobbles are subangular and include black slag). between c.2.70-3.30m BGL gravel includes white slag.	
2.70	PID J14 <sub>(SL3)</sub>	<0.1ppm		0.00		(0.90)	MADE GROUND (Brown black clayey slightly gravelly sand with fragments of wood and frequent multicoloured plastic beads. Gravel is fine to coarse angular to subangular and includes slag (75-100%)).	
3.90-4.20 3.90 4.00 4.20-5.70 4.20-5.20	ES15 <sub>(SL3)</sub> PID J16 <sub>(SL3)</sub> SL4 <sub>(SS)</sub> B17 <sub>(SL4)</sub>	<0.1ppm		3.05		4.20	MADE GROUND (Dense blue light grey very sandy gravel with low cobble content. Gravel is fine to coarse angular to	
4.20 4.40-4.60 4.40 4.50 5.00	S ES18 <sub>(SL4)</sub> PID J19 <sub>(SL4)</sub> J20 <sub>(SL4)</sub>	N49 <0.1ppm		2.05		(1.00) - - - - - - 5.20	subrounded and includes slag. Cobbles are subrounded and includes slag. Slag is vesicular (100%). Mild hydrogen sulphide odour).	10 11
5.20-5.40 5.20 5.50 5.70-7.20	ES21 <sub>(SL4)</sub> PID J22 <sub>(SL4)</sub>	<0.1ppm		2.00	0		Medium dense yellow brown slightly gravelly SAND with occasional fragments of shell (bivalve). Gravel is fine to coarse angular and includes mudstone, sandstone and limestone. (Tidal Flat Deposits).	
5.70-6.45 5.70 6.00 6.00	SL5 <sub>(SS)</sub> J23 <sub>(SL5)</sub> S J24 <sub>(SL5)</sub> PID	N28 <0.1ppm				. <del>-</del>    	(Tidal Flat Boposito).	
6.45-7.20 6.50	J25 <sub>(SL5)</sub> J26 <sub>(SL5)</sub>					- - - - - -		000
7.00 7.00 7.20-8.70 7.20-7.95 7.20	J27 <sub>(SL5)</sub> PID SL6 <sub>(SS)</sub> J28 <sub>(SL6)</sub> S	<0.1ppm N29				·— - - - - - - -		
7.50	J29 <sub>(SL6)</sub>					<u>-</u>		000

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General			
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
01/07/2021	0.00	0.00	178		0.13 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178	75 100 67 80 100 100	Yes Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 9.00-12.00m and 2.00-5.00m BGL. (5) UXO carried out as per the Client instructions.		

Checked by:  $\mathcal{K}, \mathcal{W},$ Logged by: G.T/M.B Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Investigation for NZT		Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North \ E:456595.238 N:524931.		MS\BH15
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 2 of 10

SAMP	LES & T	ESTS					STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill				
7.95-8.70 8.00 8.00	B30 <sub>(SL6)</sub> J31 <sub>(SL6)</sub> PID	<0.1ppm				· - - - -	Medium dense yellow brown slightly gravelly SAND with occasional fragments of shell (bivalve). Gravel is fine to coarse angular and includes mudstone, sandstone and limestone.	0000				
8.50	J32 <sub>(SL6)</sub>				0	-[	(Tidal Flat Deposits). (continued)	0011				
8.70-10.20 8.70-9.45 8.70 9.00	SL7 <sub>(SS)</sub> B33 <sub>(SL7)</sub> S J34 <sub>(SL7)</sub>	N24						0000				
9.00	PID	<0.1ppm				(8.20)		00				
9.45-10.20 9.50	B35 <sub>(SL7)</sub> J36 <sub>(SL7)</sub>					. <del>-</del>   		0000				
10.00 10.00 10.20-11.70 10.20-10.95	J37 <sub>(SL7)</sub> PID SL8 <sub>(SS)</sub>	<0.1ppm				: <u>-</u> - - - - -	at c.10.20m BGL dense.	0000				
10.20 10.50	B38 <sub>(SL8)</sub> S J39 <sub>(SL8)</sub>	N31						0000				
10.95-11.70 11.00 11.00	B40 <sub>(SL8)</sub> J41 <sub>(SL8)</sub> PID	<0.1ppm				. <del> -</del>  -  -  -  -		0000				
11.50	J42 <sub>(SL8)</sub>				0	<u> </u>		0				
11.70-13.20 11.70-12.45 11.70 12.00	SL9 <sub>(SS)</sub> B43 <sub>(SL9)</sub> S J44 <sub>(SL9)</sub>	N27				.[   		0000				
12.00	PID	<0.1ppm			· · · · · · · · ·			0000				
12.45 12.45-13.00 12.45-13.00 12.50	PID B45 <sub>(SL9)</sub> ES45 <sub>(SL9)</sub> J46 <sub>(SL9)</sub>	<0.1ppm				. <del>.</del> - - - -						
13.00-13.20 13.00 13.00	J48 <sub>(SL9)</sub> PID	<0.1ppm		-6.15		13.40						
13.20-14.70 13.20 13.40-13.60 13.40 E	SL10 <sub>(SS)</sub> S ES49 <sub>(SL10)</sub> S(M)50 <sub>(SL</sub>	N12				(0.90)	Soft black brown slightly sandy CLAY with frequent pockets of black very organic silty clay. Mild to moderate organic odour. (Tidal Flat Deposits).					
13.40 13.60-14.30 14.00	PID B51 <sub>(SL10)</sub> J52 <sub>(SL10)</sub>	<0.1ppm		-7.05		14.30	at c.14.00m BGL clay is of low plasticity.	-				
14.30-14.50 14.30 E 14.30 14.50-14.70 14.70-15.15	ES53 <sub>(SL10)</sub> ES(M)54 <sub>(SL</sub> PID B56 <sub>(SL10)</sub> UT1	<sup>10)</sup> <0.1ppm		-7.65	- x - x - x - x - x - x - x - x - x - x	(0.60) 14.90	Firm to stiff dark brown slightly sandy silty CLAY with occasional blue grey organic traces and fragments of wood. (Tidal Flat Deposits). at c.14.70m BGL clay is of low plasticity.					
14.70-16.20 14.80 14.80-15.45 15.00 15.45-15.65	SL11 <sub>(SS)</sub> J57 <sub>(SL11)</sub> B58 <sub>(SL11)</sub> J59 <sub>(SL11)</sub> ES60 <sub>(SL11)</sub>			-8.40		(0.75) - - - - - - - - - - - - - - - - - - -	Firm to stiff thinly laminated dark brown slightly sandy slightly gravelly CLAY with sand dustings. Gravel is fine to coarse subangular to rounded and includes mudstone and sandstone. (Tidal Flat/Glacial Deposits). at c.15.00m BGL clay is of high plasticity.					
15.45 E 15.45 15.50	S(M)61 <sub>(SL</sub> PID J62 <sub>(SL11)</sub>	<0.1ppm			× × ×	<del>}</del>	Firm to stiff thinly laminated grey brown sandy silty CLAY.					

Borin	ng Progres	s and Wat	er Observa	tions	L	iner Sample	Informatio	General			
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
01/07/2021 02/07/2021	13.20 13.20	13.20 13.20	178 178	6.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178	100 100 100 100 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 9.00-12.00m and 2.00-5.00m BGL. (5) UXO carried out as per the Client instructions.		

All din	nensions ir		For expla		mbols and	<u> </u>	Checke	, ,	L	ogged by:	Contract	No.
8	Scale 1:50.	.00	abbrevia	ations see K	ey Sheets		K. U	V.		G.T/M.B	4339	

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

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### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project: Preliminary Onshore Ground	Investigation for NZT		Exploratory Hole No.
Client: AECOM	Location: North-west of Redcar, North You E:456595.238 N:524931.81		MS\BH15
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 3 of 10

SAMPLI	ES & TE	STS					STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/		
15.90-16.20 15.90 ES 16.00 16.20-17.70	ES63 <sub>(SL11)</sub> PID B64 <sub>(SL11)</sub> S(M)66 <sub>(SL1</sub> J65 <sub>(SL11)</sub> SL12 <sub>(SS)</sub> B67 <sub>(SL12)</sub> S	<0.1ppm		-9.70	X X X X X X X X X X X X X X X X X X X	(1.30) - - - - - - 16.95	(Tidal Flat/Glacial Deposits). Firm to stiff thinly laminated grey brown sandy silty CLAY. (Tidal Flat/Glacial Deposits). (continued) at c.16.00m BGL clay is of high plasticity.			
16.50 16.95-17.15 E 16.95 17.00 17.15-17.70 I 17.15 ES 17.50 17.70-18.15 17.70-18.45 18.00 ES 18.45 ES 18.45 ES	S J68 <sub>(SL12)</sub> ES69 <sub>(SL12)</sub> PID J70 <sub>(SL12)</sub> B71 <sub>(SL12)</sub> G(M)73 <sub>(SL1</sub> J72 <sub>(SL12)</sub> UT2 SL13 <sub>(SS)</sub> B74 <sub>(SL13)</sub> J75 <sub>(SL13)</sub> ES76 <sub>(SL13)</sub> PID J78 <sub>(SL13)</sub>			-11.75		(2.05)	Firm to stiff brown red silty sandy gravelly silty CLAY. Gravelly is fine to coarse subangular to rounded and includes mudstone, sandstone and limestone. (Glacial Till).  at c.17.70m BGL high strength and laminated with silt dustings on the laminae. Clay is of high plasticity.			
9.00-19.20   E  9.00    9.20-20.00    9.20-20.00	ES79 <sub>(SL13)</sub> PID SL14 <sub>(SS)</sub> B81 <sub>(SL14)</sub> S J80 <sub>(SL14)</sub>	<0.1ppm 50/225mm		-12.75		(1.00) - - - - - - - - 20.00	Extremely weak blue grey MUDSTONE residual. (Recovered as firm slightly sandy slightly gravelly clay). (Redcar Mudstone Formation). at c.19.50m BGL clay fines are of low plasticity.			
20.00	PID	<0.1ppm					Complete at 20.00m BGL.			

Borir	g Progres	s and Wate	er Observa	itions	L	iner Sample	e Informatio	n	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
02/07/2021	20.00	20.00	178	J	16.20 - 17.70 17.70 - 19.20 19.20 - 20.00	178 178 178	73 73 100	Yes Yes Yes	(1) Description derived from drillers daily report. (2) Vacuum excavation inspection pit attempted prior to drilling. (3) Inspection pit dug prior to drilling. (4) Double installation: 2 No. 50mm diameter slotted standpipes installed between 9.00-12.00m and 2.00-5.00m BGL. (5) UXO carried out as per the Client instructions.		

For explanation of symbols and abbreviations see Key Sheets Checked by: Logged by: G.T/M.B Contract No. All dimensions in metres Scale 1:50.00 4339

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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Proje	Preliminary Onshore Ground		Exploratory Hole No.	
Clien	at: AECOM	-west of Redcar, North \ ::456595.238 N:524931		MS\BH15
Metho	od (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 4 of 10



## Figure MS\BH15.2 MS\BH15 1.20-2.70m BGL



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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yor E:456595.238 N:524931.81	MS\BH15					
Method (Equipmen	t): Sonic Coring (Boart Longyear LS250)	•	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 5 of 10				



## Figure MS\BH15.4 MS\BH15 4.20-5.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

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Project:	Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815			/IS\BH15				
Method (Equipmer	nt): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet:	6 of 10				



## Figure MS\BH15.6 MS\BH15 7.20-8.70m BGL



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### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North Yo E:456595.238 N:524931.8	MS\BH15						
Method (Equipm	nent): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 7 of 10					

# Figure MS\BH15.7 MS\BH15 8.70-10.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH15 Sample: 8.70-10.20m BGL

# Figure MS\BH15.8 MS\BH15 10.20-11.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH15 Sample: 10.20-11.70m BGL "ā.,g.,g.,g.,g.,g.,g.,g.,g.,g.,g.,g.,g.,

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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North Yo ::456595.238 N:524931.8	MS\BH15						
Method (Equi	pment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 8 of 10					

## Figure MS\BH15.9 MS\BH15 11.70-13.20m BGL



Figure MS\BH15.10 MS\BH15 13.20-14.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North Yor E:456595.238 N:524931.81	MS\BH15						
Method (Equipment	s): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 9 of 10					

## Figure MS\BH15.11 MS\BH15 14.70-16.20m BGL



## Figure MS\BH15.12 MS\BH15 16.20-17.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	oject: Preliminary Onshore Ground Investigation for NZT									
Client:	AECOM		-west of Redcar, North \ ::456595.238 N:524931.	MS\BH15						
Method (Equip	oment): Sonic Coring (Boart Longyear LS250)	•	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 10 of 10					

## Figure MS\BH15.13 MS\BH15 17.70-19.20m BGL



## Figure MS\BH15.14 MS\BH15 19.20-20.00m BGL



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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Exploratory Hole No.								
Client: AECOM	Location: North-west of Redcar, North York E:456991.050 N:524873.262	MS\BH16							
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 1 of 10						

SAMPLES & T	ESTS					STRATA	}
Depth Type	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	- lacturated
1.00-0.40 B1 1.10 J2 1.30 ES3 1.30 PID 1.40-1.20 SL1 <sub>(SS)</sub> 1.50 ES5 <sub>(SL1)</sub>	<0.1ppm		7.50		0.40	MADE GROUND (Brown slightly sandy slightly gravelly topsoil with occasional rootlets and fragments of glass and metal. Gravel is fine to coarse angular to subrounded and includes grey slag (25-50%)).  MADE GROUND (Black grey dark grey gravelly sand with	XXXXXXX
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	<0.1ppm <0.1ppm N26		6.40		(1.10) - - - 1.50	occasional cobble sized fragments of metal. Gravel is fine to coarse angular to subangular and includes clinker and slag. Slag is occasionally vesicular (10-25%)). between c.1.05-1.50m BGL slag is occasionally white. between c.1.30-1.50m BGL clayey.	<u> </u>
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	<0.1ppm		5.60		(0.80)	MADE GROUND (Soft to firm black brown sandy gravelly clay. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (100%)). at c.2.00m BGL clay is if intermediate plasticity.	
2.30-2.50 ES12 <sub>(SL2)</sub> 2.30 PID 2.50 J13 <sub>(SL2)</sub> 2.50-3.00 B14 <sub>(SL2)</sub> 2.70-4.20 SL3 <sub>(SS)</sub> 2.70	<0.1ppm				- - - - - - -	MADE GROUND (Soft grey brown sandy slightly gravelly clay. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (10-25%)). at c.2.50m BGL clay is of intermediate plasticity.	
3.00 J15 <sub>(SL3)</sub> 3.00-4.20 B16 <sub>(SL3)</sub> 3.00 PID 3.30-3.50 ES17 <sub>(SL3)</sub> PID	<0.1ppm				(1.90)	between c.3.00-4.20m BGL mild hydrocarbon odour. between c.3.10-3.40m BGL black brown.  between c.3.70-4.20m BGL very gravelly.	
J18 <sub>(SL3)</sub> .00 PID .20-5.70 SL4 <sub>(SS)</sub> .20-4.40 ES19 <sub>(SL4)</sub>	<0.1ppm		3.70		4.20	MADE GROUND (Grey black brown very clayey sand and gravel. Gravel is fine to coarse angular to subangular and includes slag	
I.20 C I.20 PID I.40-5.00 B20 <sub>(SL4)</sub>	N20 <0.1ppm		2.90		(0.80)	(75-100%) and clinker. Mild hydrocarbon odour).  MADE GROUND (Firm to stiff black red brown sandy slightly	
5.00 J22(SL4) 5.00-5.20 ES(M)24(S 5.00 J26(SL4) FID PID	<sup>4)</sup> <0.1ppm		2.30 2.20		(0.60) 5.60 5.70	gravelly clay. Gravel is fine to coarse angular to subangular and includes black slag. Slag is vesicular (100%). Hydrogen sulphide odour).  at c.5.00m BGL clay is of intermediate plasticity.	
1.20-5.60 B25 <sub>(SL4)</sub> 1.65 J27 <sub>(SL4)</sub> 1.70-7.20 SL5 <sub>(SS)</sub> 1.70-5.90 ES28 <sub>(SL5)</sub> 1.70 S	N32				- - - - -	Black very organic sandy SILT with organic rootlets. (Tidal flat Deposits). at c.5.65m BGL silt is of extremely high plasticity.	
5.70 PID 5.90-6.45 B30 <sub>(SL5)</sub> 5.00 J29 <sub>(SL5)</sub> 6.45-7.20 B32 <sub>(SL5)</sub> 5.50 J31 <sub>(SL5)</sub>	<0.1ppm				-  -  -  -  -  -	Loose to medium dense brown dark brown clayey SAND with occasional pockets of soft dark brown very sandy silty clay. (Tidal Flat Deposits). at c.5.70m BGL dense.	
3.60 PID 7.00 J33 <sub>(SL5)</sub> 7.20-8.70 SL6 <sub>(SS)</sub> 7.20-7.95 B34 <sub>(SL6)</sub>	<0.1ppm				-  -  -  -  -	at c.5.90m BGL sandy silt with shell fragments and organic matter. between c.6.90-13.20m BGL with fragments of shell. at c.7.20m BGL very loose and loose.	
7.20 S 35 7.50 J35 <sub>(SL6)</sub> 7.60 PID	N4 <0.1ppm				[-  -  -	at C.7.20111 DOL Very 1005e and 1005e.	

Boring Progress and Wate			er Observa	tions	Liner Sample Information			General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
01/07/2021 01/07/2021 02/07/2021	0.00 5.70 5.70	0.00 5.70 5.70	178 178 178	J	0.40 - 1.20 1.20 - 2.70 2.70 - 4.20 4.20 - 5.70 5.70 - 7.20 7.20 - 8.70	178 178 178 178 178 178 178	100 100 100 100 100 100 100	Yes Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 5.00m, 8.00m, 16.00m and 18.50m BGL. (4) UXO carried out as per the Client instructions.

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M. Bell	4339

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### SONIC SAMPLE HOLE RECORD

Project:	Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262			6		
Method (Equipment)	: Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 2 of 10			

SAMP	SAMPLES & TESTS						STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
7.95-8.70 8.00	B36 <sub>(SL6)</sub> J37 <sub>(SL6)</sub>					- - -	Loose to medium dense brown dark brown clayey SAND with occasional pockets of soft dark brown very sandy silty clay. (Tidal Flat Deposits). (continued)		
8.50 8.60 8.70-10.20 8.70-9.45 8.70	J38 <sub>(SL6)</sub> PID SL7 <sub>(SS)</sub> B39 <sub>(SL7)</sub> S	<0.1ppm							
9.00 9.45-10.20	J40 <sub>(SL7)</sub>	1422							
9.50 9.60 10.00	J42 <sub>(SL7)</sub> PID J43 <sub>(SL7)</sub>	<0.1ppm				[  -  -			
10.20-11.70 10.20-10.95 10.20 10.20	SL8 <sub>(SS)</sub> B44 <sub>(SL8)</sub> S PID	N4 <0.1ppm				-	at c.10.20m BGL very loose and loose silty sand.		
10.50 10.60 10.95-11.70 11.00	J45 <sub>(SL8)</sub> PID B46 <sub>(SL8)</sub> J47 <sub>(SL8)</sub>	<0.1ppm				- - - - -			
11.50 11.60 11.70-13.20 11.70-12.45	J48 <sub>(SL8)</sub> PID SL9 <sub>(SS)</sub> B49 <sub>(SL9)</sub>	<0.1ppm				-			
11.70 12.00 12.20 12.45-13.00	J50 <sub>(SL9)</sub> PID B51 <sub>(SL9)</sub>	N8 <0.1ppm				- - - - -			
12.50	J52 <sub>(SL9)</sub>					]-  -  -  -  -			
13.00-13.20 13.00 13.00 13.20-14.70 13.20	ES53 <sub>(SL9)</sub> J54 <sub>(SL9)</sub> PID SL10 <sub>(SS)</sub> S	<0.1ppm N27		-5.30	- · · · · · · · · · · · · · · · · · · ·	13.20	Firm thinly laminated red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to rounded and includes mudstone and sandstone.		
13.40 13.50	ES55 <sub>(SL10)</sub> ES(M)56 <sub>(SL1</sub> PID J57 <sub>(SL10)</sub>	<sup>(0)</sup> <0.1ppm		-6.20	~ · · · · · · · · · · · · · · · · · · ·	14.10	(Glacial Deposits). between c.13.20-13.45m BGL very sandy. at c.13.50m BGL clay is of high plasticity.		
13.60-14.10 14.00 14.10-14.30 14.10 E	J59 <sub>(SL10)</sub> ES60 <sub>(SL10)</sub> ES(M)61 <sub>(SL10)</sub>	in)			× × × × × × × × × × × × × × × × × × ×		Stiff brown red sandy gravelly silty CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone.		
14.10 14.30-14.70 14.50 14.70-15.15	B62 <sub>(SL10)</sub> J63 <sub>(SL10)</sub> UT1	<0.1ppm (100)			× × × × × × × × × × × × × × × × × × ×	[ - - -	(Glacial Till). at c.14.70m BGL high strength. Clay is of intermediate plasticity.		
4.70-16.20  4.70-16.20  5.00  5.10	SL11 <sub>(SS)</sub> B64 <sub>(SL11)</sub> J65 <sub>(SL11)</sub> PID	<0.1ppm							
15.50	J66 <sub>(SL11)</sub>				× 0× - × × ×	(3.60)			

Borin	g Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
02/07/2021 05/07/2021	14.70 14.70	14.70 14.70	178 178		8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178	100 100 100 100 100 73	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 5.00m, 8.00m, 16.00m and 18.50m BGL. (4) UXO carried out as per the Client instructions.	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by: M. Bell	Contract No. <b>4339</b>

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### SONIC SAMPLE HOLE RECORD

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Project:	Project: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		ocation: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262			MS\BH16		
Method (Equipment)	: Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet:	3 of 10		

SAME	PLES & TI	ESTS					STRATA		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill	
16.00 16.10 16.20-17.20 16.20-16.95 16.50	J67 <sub>(SL11)</sub> PID SL12 <sub>(SS)</sub> B68 <sub>(SL12)</sub> J69 <sub>(SL12)</sub>	<0.1ppm			X X X X X X X X X X X X X X X X X X X	-	Stiff brown red sandy gravelly silty CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone.  (Glacial Till). (continued)		
16.95-17.50 17.00 17.10 17.20-19.20 17.50-17.70 17.50	B70 <sub>(SL12/SL12</sub> J71 <sub>(SL12)</sub> PID SL13 <sub>(SS)</sub> ES72 <sub>(SL13)</sub> ES(M)73 <sub>(SI)</sub>	<0.1ppm		-9.80	× × × × × × × × × × × × × × × × × × ×	17.70	E-t		
17.70-18.55 17.70 18.00	ES(M)73 <sub>(SL</sub> J74 <sub>(SL13)</sub> PID B75 <sub>(SL13)</sub> S J76 <sub>(SL13)</sub>	<0.1ppm N39		-10.65		(0.85) - - - - - - - - - - - 18.55	Extremely weak blue grey MUDSTONE residual. (Recovered as grey brown sandy gravelly clay). (Redcar Mudstone Formation). at c.18.00m BGL clay fines are of intermediate plasticity.		
18.50 18.50-18.70 18.50 18.70-19.20 19.00	J77 <sub>(SL13)</sub> ES78 <sub>(SL13)</sub> PID B79 <sub>(SL13)</sub> J80 <sub>(SL13)</sub>	<0.1ppm		-11.30		- (0.65) - 19.20	Extremely weak blue grey MUDSTONE residual. (Recovered as sand and gravel). (Redcar Mudstone Formation). between c.19.00-19.20m BGL occasionally weak.  Complete at 19.20m BGL.		
19.20	FID	VV. Тррпії					Complete at 19.20m BGL.		

Borir	ng Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General		
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks	
05/07/2021	19.20	19.20	178		16.20 - 17.20 17.20 - 19.20		100 100	Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 4 No. vibrating piezometers installed at 5.00m, 8.00m, 16.00m and 18.50m BGL. (4) UXO carried out as per the Client instructions.	

All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M. Bell	<b>4339</b>

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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH16 AECOM E:456991.050 N:524873.262 Start Date: 01/07/2021 Ground Level (m): 7 904 Method (Equipment): Sonic Coring (Boart Longyear LS250) 4 of 10



## Figure MS\BH16.2 MS\BH16 1.20-2.70m BGL



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### SONIC SAMPLE HOLE RECORD

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Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH16 **AECOM** E:456991.050 N:524873.262 Ground Level (m): 7.904 Start Date: 01/07/2021 Method (Equipment): Sonic Coring (Boart Longyear LS250) 5 of 10



#### Figure MS\BH16.4 MS\BH16 4.20-5.70m BGL

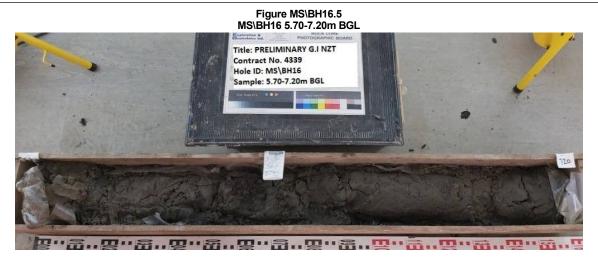


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### SONIC SAMPLE HOLE RECORD

**FINAL** 

Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\BH16 AECOM E:456991.050 N:524873.262 Start Date: 01/07/2021 Ground Level (m): 7.904 Method (Equipment): Sonic Coring (Boart Longyear LS250) 6 of 10



## Figure MS\BH16.6 MS\BH16 7.20-8.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Yor E:456991.050 N:524873.26		MS\BH16			
Method (Equipment	e): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 7 of 10			

## Figure MS\BH16.7 MS\BH16 8.70-10.20m BGL



## Figure MS\BH16.8 MS\BH16 10.20-11.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH16 AECOM E:456991.050 N:524873.262 Ground Level (m): 7.904 Start Date: 01/07/2021 Method (Equipment): Sonic Coring (Boart Longyear LS250) 8 of 10

## Figure MS\BH16.9 MS\BH16 11.70-13.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH16 Sample: 11.70-13.20m BGL

# Figure MS\BH16.10 MS\BH16 13.20-14.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

Preliminary Onshore Ground Investigation for NZT Exploratory Hole No. North-west of Redcar, North Yorkshire Client: MS\BH16 AECOM E:456991.050 N:524873.262 Start Date: 01/07/2021 Ground Level (m): 7.904 Method (Equipment): Sonic Coring (Boart Longyear LS250) 9 of 10

## Figure MS\BH16.11 MS\BH16 14.70-16.20m BGL



## Figure MS\BH16.12 MS\BH16 16.20-17.70m BGL



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### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	Exploratory Hole No.			
Client:	AECOM	-west of Redcar, North Yor E:456991.050 N:524873.26	MS\BH16	
Method (Equipment):	Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 10 of 10



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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground	Exploratory Hole No.			
Client: AECOM		ocation: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 1 of 10	

SAMP	LES & TI	ESTS				STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill			
0.10 0.30 0.30 0.30 0.50 0.50 0.50	J1 B1 ES2 PID B2 ES3 B4	<0.1ppm				(1.70)	MADE GROUND (Orange brown sandy slightly gravelly clay with occasional fragments of plastic. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone, limestone, brick and slag (10-25%)). at c.0.50m BGL clay is of low to intermediate plasticity.	89888888888888888888888888888888888888			
0.50 0.75-1.20 1.00-1.20 1.00 1.00	PID SL1 <sub>(SS)</sub> ES6 <sub>(SL1)</sub> J7 <sub>(SL1)</sub> PID	<0.1ppm		7.55		1.70	at c.1.20m BGL medium dense. between c.1.20-1.70m BGL very clayey.				
1.20-2.70 1.20-1.70 1.20 1.50	SL2 <sub>(SS)</sub> B8 <sub>(SL2)</sub> C J9 <sub>(SL2)</sub> PID	N26					MADE GROUND (Purple very gravelly sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag and coke).				
1.50 2.00-2.20 2.00 2.00 2.20-2.70	PID ES10 <sub>(SL2)</sub> J11 <sub>(SL2)</sub> PID B12 <sub>(SL2)</sub>	<0.1ppm				(2.20)	at c.2.70m BGL very dense.				
2.50 2.70-4.20 2.70-3.90 2.70 3.00-3.20	J13 <sub>(SL2)</sub> SL3 <sub>(SS)</sub> B14 <sub>(SL3)</sub> S ES15 <sub>(SL3)</sub>	51/236mm				\$ \$ \$ \$	between c.3.10-3.70m BGL grey brown.				
3.00 3.00 3.50 3.50	J16 <sub>(SL3)</sub> PID J17 <sub>(SL3)</sub> PID	0.7ppm 0.7ppm		5.35		3.90	between c.3.70-3.90m BGL pink red.  MADE GROUND (Black slightly silty sandy gravel and cobbles.				
3.90-4.20 3.90 4.00 4.20-5.70 4.20	ES18 <sub>(SL3)</sub> PID J19 <sub>(SL3)</sub> SL4 <sub>(SS)</sub> S	2.0ppm 50/200mm				(1.80)	Gravel is fine to coarse angular to subrounded and includes clinker, compacted ash and slag (25-50%). Cobbles are angular to subangular and include slag and compacted ash. Mild hydrocarbon odour).  (Engineer notes locally saturated).				
5.00-5.20 5.00 5.00 5.20-5.70 5.50	ES20 <sub>(SL4)</sub> J21 <sub>(SL4)</sub> PID B22 <sub>(SL4)</sub>	0.3ppm					at c.4.20m BGL very dense.	0000			
5.50 5.70-7.20 5.70 6.00 6.00-6.20	J23 <sub>(SL4)</sub> PID SL5 <sub>(SS)</sub> S J24 <sub>(SL5)</sub> ES25 <sub>(SL5)</sub>	0.2ppm N24		3.55		5.70	MADE GROUND (Orange yellow black slightly silty sandy gravel and cobbles with pockets of black very organic pseudo-fibrous silt. Gravel is fine to coarse angular to subangular and includes slag, clinker and brick. Moderate organic odour).				
6.00 6.20-6.70 6.50 6.50	PID B26 <sub>(SL5)</sub> J27 <sub>(SL5)</sub> PID	<0.1ppm				(1.50)	at c.5.70m BGL dark blue rounded metallic cobble. at c.5.70m BGL medium dense.				
7.00	PID	<0.1ppm		2.05		7.20					
7.20-8.70 7.20-7.40 7.20 7.20 7.40-7.95 7.50	SL6 <sub>(SS)</sub> ES28 <sub>(SL6)</sub> S PID B29 <sub>(SL6)</sub> J30 <sub>(SL6)</sub>	N13 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	- - - - - - - -	Medium dense yellow grey brown silty SAND with occasional fragments of shell. (Tidal Flat Deposits).				

7.50	J30 <sub>(SL6)</sub>				, .				
Borin	g Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
06/07/2021	0.00	0.00	178		0.75 - 1.20	178	100	Yes	(1) Description derived from drillers daily report.
					1.20 - 2.70	178	100	Yes	(2) Inspection pit dug prior to drilling.
					2.70 - 4.20	178	100	Yes	(3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 2.00-5.00m and
					4.20 - 5.70	178	50	Yes	18.50-20.00m BGL.
					5.70 - 7.20	178	33	Yes	(4) UXO carried out as per the Client instructions.
					7.20 - 8.70	178	100	Yes	
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### SONIC SAMPLE HOLE RECORD

Project: Preliminary Onshore Ground		Exploratory Hole No.					
Client: AECOM	North-west of Redcar, North Yorkshire E:457140.890 N:524810.592						
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 2 of 10				

SAMP	LES & TE	ESTS					STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill				
7.95-8.70 8.00 8.00 8.50	B31 <sub>(SL6)</sub> J32 <sub>(SL6)</sub> PID	<0.1ppm			×	- - - -	Medium dense yellow grey brown silty SAND with occasional fragments of shell. (Tidal Flat Deposits). (continued)					
8.70-10.20 8.70-9.45 8.70 9.00 9.00	J33 <sub>(SL6)</sub> SL7 <sub>(SS)</sub> B34 <sub>(SL7)</sub> S J35 <sub>(SL7)</sub> PID	N28 <0.1ppm			× · · · · · · · · · · · · · · · · · · ·	(3.30) - - - - - -						
9.45-10.20 9.50	B36 <sub>(SL7)</sub> J37 <sub>(SL7)</sub>				×	-						
10.00 10.20-11.70 10.20	J38 <sub>(SL7)</sub> SL8 <sub>(SS)</sub> S	N29		-1.25	× · · · · · · · · · · · · · · · · · · ·	10.50						
10.50 10.50	ES39 <sub>(SL8)</sub> ES(M)40 <sub>(SL8)</sub> J41 <sub>(SL8)</sub> PID	<0.1ppm			* - * - : * - * - : * - :		Soft dark brown slightly sandy CLAY/SILT. (Tidal Flat Deposits). at c.10.50m BGL clay/silt is of low plasticity.					
10.70-11.40 11.00 11.00	B42 <sub>(SL8)</sub> J43 <sub>(SL8)</sub> PID J44 <sub>(SL8)</sub>	<0.1ppm		-2.15	× × ×	11.40	Loose to medium dense yellow brown SAND with occasional					
11.70-13.20 11.70 12.00	SL9 <sub>(SS)</sub> S	N14 <0.1ppm				- - - -	fragments of shell. (Tidal Flat Deposits).					
12.45-13.20 12.50	B41 <sub>(SL9)</sub> J42 <sub>(SL9)</sub>	О.Тррпі				(2.80)						
13.00 13.20-14.70 13.20-13.40 13.20 13.20	J43 <sub>(SL9)</sub> SL10 <sub>(SS)</sub> ES44 <sub>(SL10)</sub> S PID	N9 <0.1ppm				- - - - - - -	between c.13.20-13.45m BGL very sandy.					
14.20-14.40 14.20	ES45 <sub>(SL10)</sub> ES(M)46 <sub>(SL1</sub>			-4.95	× × ×	14.20	Soft dark brown slightly sandy silty CLAY.					
14.20 14.50 14.70-15.15 14.70-16.20 14.70-15.35 15.00	J47 <sub>(SL10)</sub> UT1 SL11 <sub>(SS)</sub> B48 <sub>(SL11)</sub> J49 <sub>(SL11)</sub>	<0.1ppm (30)			* - × - :	(1.15)	(Tidal Flat Deposits).  at c.14.70m BGL low strength. Clay is of intermediate plasticity.					
15.00 15.35-15.55 15.35 15.35 15.50 15.55-16.20	PID ES50 <sub>(SL11)</sub> ES(M)51 <sub>(SL1</sub> PID J52 <sub>(SL11)</sub> B53 <sub>(SL11)</sub>	<0.1ppm  1) <0.1ppm		-6.10	X X X X X X X X X X X X X X X X X X X	- 15.35 - - - - (0.85)	Stiff red brown sandy gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone, limestone and coal. (Glacial Till).					

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Borir	ng Progres	s and Wat	er Observa	tions	L	iner Sample	e Informatio	General	
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks
06/07/2021 07/07/2021	14.70 14.70	14.70 14.70	178 178	6.00	8.70 - 10.20 10.20 - 11.70 11.70 - 13.20 13.20 - 14.70 14.70 - 16.20	178 178 178	73 53 100 47 100	Yes Yes Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 2.00-5.00m and 18.50-20.00m BGL. (4) UXO carried out as per the Client instructions.

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	All dimensions i Scale 1:50		 nation of sy ations see K		Checked by:	Logged by: M. Bell	Contract No. 4339

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### SONIC SAMPLE HOLE RECORD

Project:	ect: Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592									
Method (Equipment	): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet:	3 of 10					

SAMP	LES & TI	ESTS			STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill			
16.00 16.00 16.20-17.70 16.20-17.30 16.20 16.50	J54 <sub>(SL11)</sub> PID SL12 <sub>(SS)</sub> B55 <sub>(S12)</sub> S J56 <sub>(S12)</sub>	<0.1ppm N23		-6.95	× × × × × × × × × × × × × × × × × × ×	16.20 - - - - (1.10)	at c.15.50m BGL clay is of intermediate plasticity.  Firm thinly laminated brown sandy silty CLAY. (Glacial Till).				
17.00 17.00 17.30-17.70 17.50	J57 <sub>(S12)</sub> PID B58 <sub>(S12)</sub> J59 <sub>(S12)</sub>	<0.1ppm		-8.05	× × × × × × × × × × × × × × × × × × ×	17.30	Stiff brown red sandy gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and				
17.70-18.15 17.70-19.20 17.70-17.90	UT2 SL13 <sub>(SS)</sub> ES60 <sub>(S13)</sub> ES(M)61 <sub>(S1</sub>	(50)		-8.75		(0.70) - 18.00	limestone. (Glacial Till). at c.17.70m BGL very high strength. Clay is of intermediate plasticity.				
17.70 17.70 18.00-18.70 18.50 18.70-18.90	PID B62 <sub>(S13)</sub> J63 <sub>(S13)</sub> ES64 <sub>(S13)</sub>	<sup>3)</sup> <0.1ppm		-9.45		(0.70) - 18.70	Extremely weak blue grey MUDSTONE residual. (Recovered as blue brown sandy gravelly clay).	0000			
18.70 18.90-20.00 19.00 19.20-20.00 19.20	PID B65 <sub>(S13)</sub> J66 <sub>(S13)</sub> SL14 <sub>(SS)</sub> S	<0.1ppm					Extremely weak blue grey MUDSTONE residual. (Recovered as sand and gravel). (Redcar Mudstone Formation). between c.19.00-19.20m BGL weak.				
19.50	J67 <sub>(S14)</sub>	30/ T03Hilli		-10.75		- - - - 20.00		000			
20.00	J68 <sub>(S14)</sub> PID	<0.1ppm				- - - - - -	Complete at 20.00m BGL.				
						- - - - -					
						- - - - - -					
						- - - - -					
						- - - - -					
						- - -					

Borin	ng Progres	s and Wat	er Observa	itions	L	iner Sample	e Informatio	General			
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	Remarks		
07/07/2021	20.00	20.00	178	6.00	16.20 - 17.70 17.70 - 19.20 19.20 - 20.00	178 178 178	100 100 89	Yes Yes Yes	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Double installation: 2 No. 50mm diameter slotted standpipes installed between 2.00-5.00m and 18.50-20.00m BGL. (4) UXO carried out as per the Client instructions.		

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All dimensions in metres	For explanation of symbols and abbreviations see Key Sheets	Checked by:	Logged by:	Contract No.
Scale 1:50.00		K.W.	M. Bell	4339

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#### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT				
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592			MS\BH17
Method (Equipment	e): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 4 of 10

## Figure MS\BH17.1 MS\BH17 0.75-1.20m BGL



#### Figure MS\BH17.2 MS\BH17 1.20-2.70m BGL



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Status:-**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT				
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592			MS\BH17
Method (Equipment)	): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 5 of 10

## Figure MS\BH17.3 MS\BH17 2.70-4.20m BGL



#### Figure MS\BH17.4 MS\BH17 4.20-5.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

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Project:	Project: Preliminary Onshore Ground Investigation for NZT					
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592			MS\BH17	
Method (Equipment	e): Sonic Coring (Boart Longyear LS250)	•	Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 6 of 10	

## Figure MS\BH17.5 MS\BH17 5.70-7.20m BGL



## Figure MS\BH17.6 MS\BH17 7.20-8.70m BGL



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#### SONIC SAMPLE HOLE RECORD

**FINAL** 

	l l				
Project:	Project: Preliminary Onshore Ground Investigation for NZT				
Client:	AECOM	Location: North-west of Redcar, North Yorkshire E:457140.890 N:524810.592			MS\BH17
Method (Equipmen	t): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 7 of 10

### Figure MS\BH17.7 MS\BH17 8.70-10.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH17 Sample: 8.70-10.20m BGL



## Figure MS\BH17.8 MS\BH17 10.20-11.70m BGL



Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	Project: Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Yor E:457140.890 N:524810.59		MS\BH17			
Method (Equipment	e): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 8 of 10			

## Figure MS\BH17.9 MS\BH17 11.70-13.20m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH17 Sample: 11.70-13.20m BGL

## Figure MS\BH17.10 MS\BH17 13.20-14.70m BGL Title: PRELIMINARY G.I NZT Contract No. 4339 Hole ID: MS\BH17 Sample: 13.20-14.70m BGL g"a..g"a..g"a..g"a..g"a..g"a..g

Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



### SONIC SAMPLE HOLE RECORD

**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yor E:457140.890 N:524810.59		MS\BH17				
Method (Equipmen	t): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 9 of 10				

## Figure MS\BH17.11 MS\BH17 14.70-16.20m BGL



### Figure MS\BH17.12 MS\BH17 16.20-17.70m BGL



Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

### SONIC SAMPLE HOLE RECORD

Status:-**FINAL** 

Project:	roject: Preliminary Onshore Ground Investigation for NZT								
Client:	AECOM		-west of Redcar, North Yor ::457140.890 N:524810.59		MS\BH17				
Method (Equipmen	t): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 9.247	Start Date: 06/07/2021	Sheet: 10 of 10				

### Figure MS\BH17.13 MS\BH17 17.70-19.20m BGL



### Figure MS\BH17.14 MS\BH17 19.20-20.00m BGL



**Trial Pit Records** 



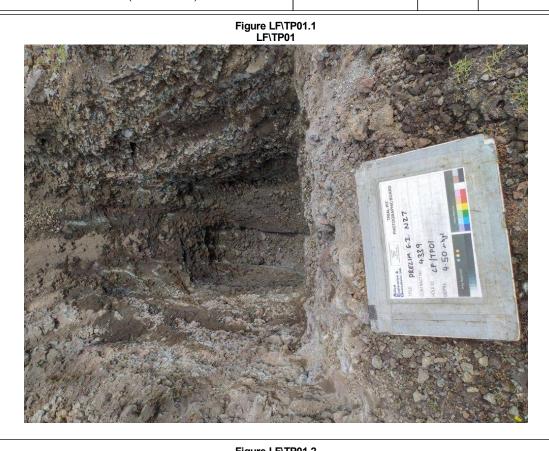
	TRIAL PIT RECORD									Status:- FINAL	
Project:		Prelin	ninary	Onshor	e Groun	d Investiç	gation f	or NZT		Exploratory Hole No.	
Client:		AECOM				Location	North-v	west of Redcar, North 457392.527 N:52570		LF\TP01	
Method (Equipn		hine Excavate	d (Kor	natsu 2′	10)	•		Ground Level (m): 7.172	Start Date: 23/06/2021	Sheet: 1 of 3	
SAN	//PLES & T	ESTS						STRATA	\	•	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description		
0.30 0.30 0.40 0.50 0.50 0.80 1.100 1.100 1.101 1.50 1.85 1.90 2.00 2.40 2.50 2.90 3.00 3.00 3.40 3.50 3.60 3.90 4.00 4.50	ES1 PID J2 ES3 PID B4 ES5 PID J6 J7 PID B8 LB9 J10 ES11 PID J12 PID J12 PID J15 J16 PID J17 LB18 ES19 PID J17	0.1ppm <0.1ppm 0.1ppm <0.1ppm 0.2ppm 0.2ppm <0.1ppm		2.67		(4.45)	rootle fine to MAD bould Grave suba and in	ets. Sand is fine to coa o medium subangular E GROUND (Grey slig der content. Sand is fin el is fine to coarse sul	arse and include and includes ve ghtly sandy gravine ne to coarse and bangular and inc g. Boulders are esicular (100%))	el and cobbles with low I includes crushed slag. Iludes slag. Cobbles are subangular to subrounde	
4.50 Lace D	PID	PLAN 4.00 Face A Orientation		Take D	2.10		JNDW A	ATER er inflow observed. Dar	np between 3.50-	4.50m.	

	Face C					
ADD	ITIONAL INFOR	MATION	GENERAL REMARK	<b>KS</b>		
Sketch Diagram:	No S	Sketch Taken				
Photographs:	Yes	See additional sheets.				
All dimensions i Scale 1:50		For explanation of abbreviations se	of symbols and ee Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. 4339

Project:

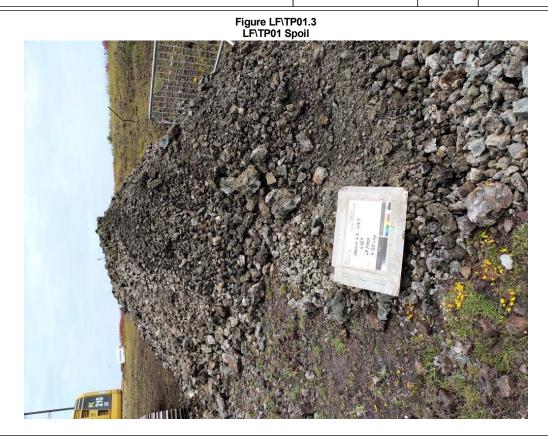
Client:

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457392.527 N:525703.811 | Ground Level (m): | Start Da | 23/06 LF\TP01 **AECOM** Start Date: 23/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3





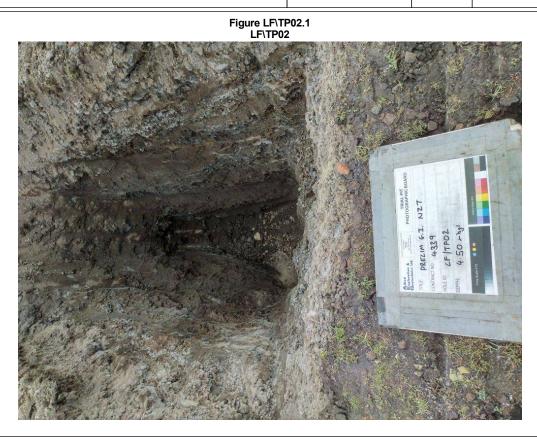
#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: LF\TP01 **AECOM** E:457392.527 N:525703.811 | Ground Level (m): 7.172 Start Date: 23/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



<b>⚠</b>	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelto Unit 20 Business Development Centre, E	on Fell, Chester-le-Street, Co. Durham, DH2 2RG Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 38 Tel: 01772 735 300 Fax: 01772 73	
		TRI	AL PIT RECORD		Status:- FINAL
Project:	Pre	liminary Onshore Ground	Investigation for NZT	Exploratory Hole No.	
Client:	AECOM		Location: North-west of Redcar,	North Yorkshire	LF\TP02

Client: AECOM				Location	Location: North-west of Redcar, North Yorkshire E:457400.272 N:525733.924				LF\TP02		
Method (Equipm		chine Excavate	ed (Kon	natsu 21	10)		Ground Le		Start Date: 23/06/2021	Sheet:	1 of 3
SAN	/IPLES &	TESTS					I	STRATA	1		
Depth	Type No	Test Result	Water	Reduced Level		Depth (Thickness)		С	escription		
0.30 0.30 0.50 0.55 0.55 0.80 1.00 1.00 1.00 1.50 1.50 1.50 2.00 2.10 2.210 2.50 2.60 2.80 3.10 3.50 3.60 3.80 4.00 4.10 4.50	ES1 PID ES2 PID J3 B4 ES5 PID J6 J7 PID B8 ES9 PID J7 PID J11 PID J11 PID J11 LB13 ES14 PID J15 LB16 PID	0.1ppm 0.1ppm 0.3ppm 1.1ppm 0.2ppm 2.1ppm 1.0ppm 4.0ppm <0.1ppm		3.39		(4.45)	rootlets. Sar fine to media (100%)). MADE GRO low boulder slag. Gravel are subangu	UND (Red brown and is fine to coarse um subangular and UND (Grey clayey content. Sand is fine to coarse salar and include slag and include slag.	and includes d includes sla silty sandy g ne to coarse subangular ar ag. Boulders	s crushed ag. Slag i ravel and and include are suba	d slag. Gravel is sevesicular descrushed es slag. Cobbles ingular to
		PLAN 4.00 Face A			<u>                                     </u>		INDWATER undwater inflov	v observed. Damp b	petween 2.00-4	4.50m BG	L.
Orientation  270°  Page B  Face C				- 2.10 ——→	STABI Pit side		able throughout exca	avation.			
	4551	IONIAL INIEGO	NAATIC				DAL DELAS:	<b>10</b>			
ADDITIONAL INFORMATION  Sketch Diagram: No Sketch Taken			GENERAL REMARKS								
Photograp	ohs:	Yes		See add		-					
	nsions in ale 1:50.0			For exp abbrev	lanation e	of symbo	ols and Sheets	Checked by:	Logged D. Portsr		Contract No. 4339

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457400.272 N:525733.924 | Ground Level (m): | Start Da | 23/06 Client: LF\TP02 **AECOM** Start Date: 23/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3





#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: LF\TP02 **AECOM** Start Date: 23/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



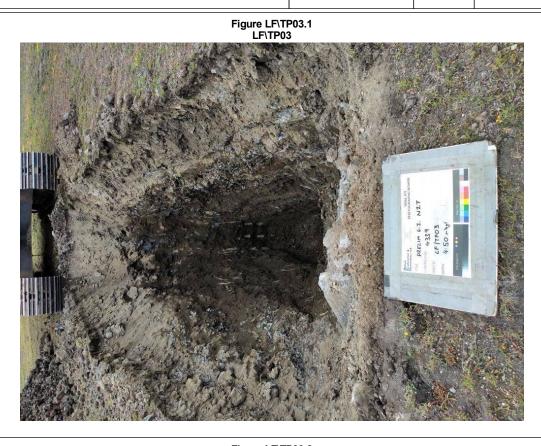
E:457407.062 N:525773.704

<b>A</b>	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelto Unit 20 Business Development Centre, I	on Fell, Chester-le-Street, Co. Durham, DH2 2RG Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 387 Tel: 01772 735 300 Fax: 01772 73		
<b>E</b> <b>G</b>		TRI	AL PIT RECORD		Status:- FINAL	
Project:	Pre	Preliminary Onshore Ground Investigation for NZT				
Client:	AECOM		Location:	North Vorkshire	LF\TP03	

Method (Equipm	nent):						Ground Le		Start Date:	Sheet:	
	Ma	chine Excavate	ed (Kon	natsu 21	10)			7.703	24/06/2021		1 of 3
SAM	IPLES &	TESTS						STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		I	Description		
0.30 0.30 0.30 0.45 0.50 0.50 0.50 1.00 1.00 1.10 1.145 1.50 1.80 2.00 2.00 2.45 2.50 2.80 2.95 3.00 3.345 3.50 3.80 3.80 3.80 3.80 3.80 3.80 4.00	ES1 PID J2 ES3 PID B4 J5 ES6 PID LB7 J8 PID B9 J10 ES11 PID J12 PID B13 J14 ES15 PID B17 J16 PID B17 J18 ES19	0.4ppm <0.1ppm <0.1ppm 1.5ppm 1.1ppm 1.2ppm 2.0ppm		6.50		(1.15)	rootlets. Sar fine to mediu (100%)). MADE GRO Sand is fine coarse suba include slag. slag. Slag is MADE GRO boulder cont Gravel is fine subangular a subrounded (Engineer no	id is fine to coarse um subangular an	e and includes di includes sla prown slightly ludes crushee es slag. Cobb pangular to sun vesicular (1 y sandy grave to coarse and gular and inc. Boulders are J. Slag is vesiblatively high	s crushe ag. Slag sandy gid slag. G bles are: ubrounde 00%)). el and cc liudes cludes cludes cludes cludes cludes cludes content content	is vesicular  Fravel and cobbles  Fravel is fine to  Subangular and  ed and include  Dibbles with low  s crushed slag.  ag. Cobbles are  Jular to  Jular to  July  of metal -
4.00 4.50 4.50	PID LB20 PID	2.2ppm 2.0ppm		3.20		4.50 - - - - - - - - - - -	Complete at	4.50m BGL.			
Face D		PLAN 4.00 Face A  Orientation 270° Face C		- Tace D	2.30 —	No gro	LITY	observed. Damp		4.50m BC	GL.
ADDITIONAL INFORMATION  Sketch Diagram: No Sketch Taken				GENE	RAL REMARI	KS					
Photograp	ohs:	Yes		See add shee							
	nsions in ale 1:50.0					of symbo		Checked by: K,W,	Logged D. Portsi	d by: mouth	Contract No. <b>4339</b>

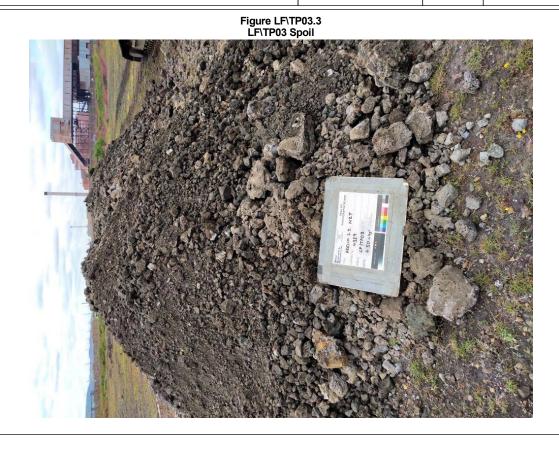
## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Re

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457407.062 N:525773.704 | Ground Level (m): | Start Da | 24/06 Client: LF\TP03 **AECOM** Start Date: 24/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3





TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457407.062 N:525773.704 | Ground Level (m): | Start Da | 24/06 Client: LF\TP03 **AECOM** Start Date: 24/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



Machine Excavated (Komatsu 210)

Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL

Start Date:

16/06/2021

1 of 3

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-	

Project:

Client:

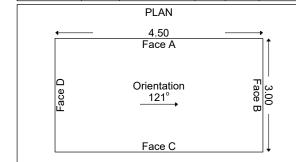
Method (Equipment):

TRIA	AL PIT RECORD	FINAL
Preliminary Onshore Ground	Investigation for NZT	Exploratory Hole No.
AECOM	Location: North-west of Redcar, North Yorkshire	MS\TP01

E:457180.039 N:525540.369

6.638

**SAMPLES & TESTS STRATA** Water Reduced Depth Depth Legend Description MADE GROUND (Black brown grey very gravelly sand with low (0.40) cobble and boulder content and fragments of rubber, plastic and 0.20 0.20 0.30 0.30 0.40 0.50 0.50 ES2 PID metal. Gravel is fine to coarse angular to subrounded and includes <0.1ppm concrete and slag. Cobbles are angular to rounded and include slag В3 and concrete. Boulders are subangular and include concrete. Slag is FS4 vesicular (50-75%)). PID <0.1ppm at c.0.10m BGL ... metal rope recovered - 10m in length. 0.70 1.00 1.00 J5 ES6 MADE GROUND (Black gravelly sand with low cobble and boulder <0.1ppm content and occasional boulder sized fragments of metal, plastic, 1.20 J7 B8 fabric and timber. Gravel is fine to coarse angular to subrounded and 1.40 includes clinker and slag. Cobbles are angular to rounded and 1.50 1.70 PID <0.1ppm include concrete, brick and slag. Boulders are angular to rounded (3.00)and include concrete. Slag is vesicular (50-75%)). 2.00 2.00 2.00 2.20 2.40 2.50 2.70 ES10 at c.0.50m BGL ... steel beam recovered (approximately 3m in LB11 length). PID J12 B13 0.2ppm at c.1.40m BGL ... clayey/silty very sandy gravel. PID <0.1ppm J14 3.00 ES15 3.00 3.20 PID 0.2ppm J16 3.40 3.50 B17 MADE GROUND (Black yellow slightly clayey gravelly sand with PID <0.1ppm occasional fragments of shell (bivalve). Gravel is fine to coarse 3.70 J18 angular to subangular and includes clinker and slag. Mild hydrocarbon odour). 4.00 4.00 4.00 4.20 4.40 4.50 ES19 LB20 PID <0.1ppm 4.50 J21 Complete at 4.50m BGL. B22 <0.1ppm



**GROUNDWATER** 

Seepage at 4.47m and 4.50m BGL - slow inflow. Water level on completion at 4.48m BGL. Engineer notes water is murky.

**STABILITY** 

Pit sides and base unstable throughout excavation.

ADD	ADDITIONAL INFORMATION			KS		
Sketch Diagram:	No Sketch Taken					
Photographs:	Yes	See additional sheets.				
All dimensions in metres For explanation of Scale 1:50.00 abbreviations see			Checked by: $\mathcal{K}, \mathcal{W},$	Logged by: M. Bell	Contract No. <b>4339</b>	

Print Date and Time: 29/11/2021 14:33:00

## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 29 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4701 Tel: 01772 735 300 Fax: 01772 735 999

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457180.039 N:525540.369 | Ground Level (m): | Start Da | 16/06 Client: MS\TP01 **AECOM** Start Date: 16/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3

# Figure MS\TP01.1 MS\TP01





## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 29 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4701 Tel: 01772 735 300 Fax: 01772 735 999

**AECOM** 

Project:

Client:

Method (Equipment):

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457180.039 N:525540.369 | Ground Level (m): | Start Da | 16/06 MS\TP01 Start Date: 16/06/2021





A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Unit 20 Business Development Centre, Eanam <sup>1</sup>
Ğ		TRIAL
Project:	Des	limin and One have Consumed laws

**AECOM** 

Client:

TRI	AL PIT R	ECORD		FINAL
Preliminary Onshore Ground	Investigation	for NZT		Exploratory Hole No.
ОМ		-west of Redcar, North Yor ::457331.165 N:525558.34		MS\TP03
cavated (Komatsu 210)	•	Ground Level (m): 5.076	Start Date: 14/06/2021	Sheet: 1 of 3

Method (Equipment):						Ground Level (m): 5.076	Start Date: 14/06/2021	Sheet: 1 of 3			
Machine Excavated (Komatsu 210)							5.076	14/00/2021	1013		
SAMPLES &	TESTS						STRATA				
Depth Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)						
0.20 J1 0.30 ES2 0.30 PID 0.40 B3 0.50 ES4 0.50 PID 1.00 ES6 1.00 PID 1.20 J7 1.40 B8 1.50 PID 1.70 J9 2.00 ES10 2.10 LB11 2.20 J12 2.40 B13	0.2ppm  0.5ppm  0.2ppm  0.5ppm	₹	2.58		(2.40)	Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes vesicular slag (100%)).  MADE GROUND (Grey brown green slightly sandy gravel and cobbles with low boulder content and fragments of iron and wood. Sand is fine to coarse and includes crushed slag. Gravel is fine to coarse subangular and includes slag. Slag is vesicular (100%). Cobbles are subangular and include slag. Slag is vesicular (100%). Boulders are subangular to subrounded and include slag. Slag is vesicular (75-100%)). between c.0.10-2.50m BGL slag is iron rich (frequent rust).					
<u> </u>	PLAN 4.50 Face A			<b>1</b>			ATER ata at 2.35m BGL - moder	ate inflow.			
Orientation  205°  Face C					STABIL Pit sides		base moderately stable th	roughout excav	ation.		
					<u> </u>						
ADDITIONAL INFORMATION					GENER	AL F	REMARKS				
Sketch Diagram: No Sketch Taken											
Photographs:	Yes		See add								

For explanation of symbols and abbreviations see Key Sheets

Checked by:  $\mathcal{K}, \mathcal{W},$ 

Logged by: D. Portsmouth

Contract No. 4339

All dimensions in metres Scale 1:50.00

#### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457331.165 N:525558.341 | Ground Level (m): | Start Da | 14/06 Client: MS\TP03 **AECOM** Start Date: 14/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3





#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457331.165 N:525558.341 | Ground Level (m): | Start Da | 14/06 Client: MS\TP03 **AECOM** Start Date: 14/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909

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### Status:-TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457237.761 N:525366.515 | Ground Level (m): | Start Date: 14/06/20 Client: MS\TP04 **AECOM** Method (Equipment):

Method (Equipm		chine Excavate	ed (Kom	natsu 21	10)		Grou	nd Level (m): 8.831	Start Date: 14/06/2021	Sheet:	1 of 3	
SAM	1PLES &	TESTS					STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description			
0.20 0.30 0.40 0.50 0.50 0.70 1.00 1.20 1.40 1.50 1.70 2.00 2.20 2.40 2.50 2.70 3.00 3.20 3.40 3.70 4.00 4.00 4.00 4.00 4.20 4.40 4.50	J1 ES2 B3 ES4 PID J5 ES6 PID J7 B8 PID J9 ES10 PID J11 B12 LB13 PID J14 ES15 PID J16 B17 J18A ES18 LB19 PID J20 B21 PID	0.5ppm 0.5ppm 0.4ppm		4.33		0.10	Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes slag. Slag is vesicular (100%)).  MADE GROUND (Grey brown green slightly sandy gravel and cobbles with low boulder content. Sand is fine to coarse and includes crushed slag. Gravel is fine to coarse subangular and includes slag. Cobbles are subangular and include slag. Boulders are subangular to subrounded and include slag. Slag is vesicular (100%)).  between c.1.70-2.50m BGL slight sulphurous odour. between c.1.70-2.50m BGL fused slag. (Engineer notes ripper tooth used to progress).  between c.2.50-4.50m BGL occasionally slightly saturated.					
Sketch Diag		PLAN 4.00 Face A  Orientation 054° Face C	MATIO Sketch Ta		2.50	STABIL Pit sides	LITY	nflow observed.	oughout excav	ation.		
Photograp		Yes	okeiti 18	See add								
	nsions in ale 1:50.0			For exp abbrev	lanation iations s	ntion of symbols and Checked by: Logged by: Contract on See Key Sheets K.W. D.P/M.B 4339						

## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 29 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4701 Tel: 01772 735 300 Fax: 01772 735 999

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457237.761 N:525366.515 | Ground Level (m): | Start Da | 14/06 Client: MS\TP04 **AECOM** Start Date: 14/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3









#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457237.761 N:525366.515 | Ground Level (m): | Start Da | 14/06 Client: MS\TP04 **AECOM** Start Date: 14/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



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 Tel: 01772 735 300 Fax: 01772 735 999

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#### Status:-TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\TP05 **AECOM** E:457024.962 N:525378.428 Ground Level (m): 7 165 Start Date:

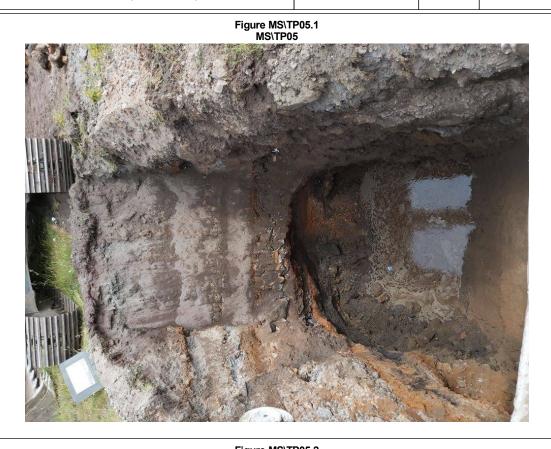
								1.962 N:525378.428				
Method (Equipment):  Machine Excavated (Komatsu 210)							Ground Le	evel (m): \$ 7.165	Start Date: 17/06/2021	Sheet:	1 of 3	
SAI	MPLES &	TESTS				STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description					
0.20 0.30 0.30 0.40 0.50 0.50 0.70 1.00 1.00 1.20 1.40	J1 ES2 PID B3 ES4 PID J5 ES6 LB7 PID J8	0.3ppm 0.4ppm 0.6ppm				(2.60)	high cobble silty sand (a includes sla Cobbles are	UND (Grey brown of and low boulder cot sh). Gravel is fine to g, concrete, clinker angular to subanguers are subangular t	ntent with oo coarse and and brick. S ular and incl	ccasiona gular to lag is ve ude slag	al pockets of black rounded and esicular (50-75%). g, concrete and	
1.50 1.70 2.00 2.00 2.20 2.40	PID J10 ES11 PID J12 B13	7.2ppm		4.57		2.60						
2.50 2.70 3.00 3.00 3.20	PID J14 ES15 PID J16	0.1ppm <0.1ppm		3.87		(0.70) (3.30	cobble conte include slag vesicular (10		coarse ang ngular and ir	ular to s nclude s	subangular and slag. Slag is	
3.40 3.50 3.70 4.00	B17 PID J18 ES19	0.1ppm	1			(1.00)	Gravel is fin	UND (Black silty sa e to coarse angular obbles are angular to (50-75%)).	to subangu	lar and i	ncludes clinker	
4.00 4.00 4.20	PID J21	0.1ppm	<u></u>	2.87		4.30	Complete at	4.30m BGL.				
		PLAN 4.50 Face A			<u> </u>		NDWATER ge at 4.20m an	d 4.30m - moderate iı	nflow.			
Face D		Orientation 		T acc	3.40	STABI						
		Face C				Pit side	es and base mo	oderately stable throu	gnout excava	ation.		
	ADDI <sup>-</sup>	TIONAL INFOR	MATIC	)N		GENE	RAL REMARI	(S				
Sketch Diagram: Sketch Taken												
Photogra	phs:	Yes		See add shee								
	ensions ir ale 1:50.			For exp abbrev	lanation iations s	of symbols and checked by: Logged by: Contract No. eee Key Sheets K.W. M. Bell 4339						
									•			

Project:

Client:

Method (Equipment):

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457024.962 N:525378.428 | Ground Level (m): | Start Da | 17/06 MS\TP05 **AECOM** Start Date: 17/06/2021 Machine Excavated (Komatsu 210) 2 of 3





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C)	TRI	AL PIT R	ECORD		FINAL			
Project:	Preliminary Onshore Ground Investigation for NZT							
Client:	AECOM		-west of Redcar, North Yor E:457024.962 N:525378.42		MS\TP05			
Method (Equipment):	Machine Excavated (Komatsu 210)		Ground Level (m): 7.165	Start Date: 17/06/2021	Sheet: 3 of 3			



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### Status:-TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT Location: North-west of Redcar, North Yorkshire E:457098.335 N:525335.771 Client: MS\TP06 **AECOM**

Method (Equipn	nont):							Ground Level (m):	Start Date:	Sheet:		
metriou (Equipri		chine Excavated	d (Kon	natsu 21	10)			7.271	15/06/2021	1 of 3		
SAN	MPLES &	TESTS					STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description			
0.20 0.30 0.30 0.40 0.50 0.50	J1 ES2 PID B3 ES4 PID J5	<0.1ppm		6.47		(0.80)	and glas bricl inclu inclu betv	DE GROUND (Black oran low boulder content and is. Gravel is fine to coarse k, concrete and clinker. Cude concrete and slag. Boude concrete and slag. Slaveen c.0.50-3.00m BGL ace/ladle. Metal boulders	frequent fragre angular to su obbles are an oulders are an ag is vesicula . historic struc	ments of metal, rubber and ubrounded and includes igular to subangular and igular to subangular and r (50-75%)).  cture potentially		
1.20 1.20 1.50 1.50	ES6 PID J7 PID	<0.1ppm <0.1ppm				(2.00)	MAI bou sub	DE GROUND (Black very lder sized fragments of m	sandy gravell etal. Gravel is ker and slag. \$	y cobbles with occasional sfine to coarse angular to Slag is vesicular (25-50%).		
3.10 3.20 3.20 3.20	EW8 ES9 J10 PID	501.0ppm	<u></u>	4.47		2.80	MADE GROUND (Brown black silty sand and gravel. Gravel is fine to					
		PLAN				GROU	INDW	'ATER				
		5.00 Face A			<b>†</b>	BGL. B	etwee	ata at 3.00m BGL - heavy in a 3.00-3.20m BGL enginee with moderate hydrocarbon	r notes water h	evel on completion at 3.10m nas brown iridescent		
Face D		Orientation 022° →		٦ د د د	2.90 —	STABI Pit side		base unstable throughout of	excavation.			
		Face C										
	דוחח	TIONAL INFORM	ΙΔΤΙΩ	N		GENE	RAI I	REMARKS				
Sketch Dia			etch T			11 -		ated as MS\TP06A.				
Photogra	phs:	Yes		See add								

For explanation of symbols and abbreviations see Key Sheets

Checked by:

Logged by: M. Bell

Contract No.

4339

All dimensions in metres Scale 1:50.00

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457098.335 N:525335.771 | Ground Level (m): | Start Da | 15/06 Client: MS\TP06 **AECOM** Start Date: 15/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 3





## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Re

**AECOM** 

Client:

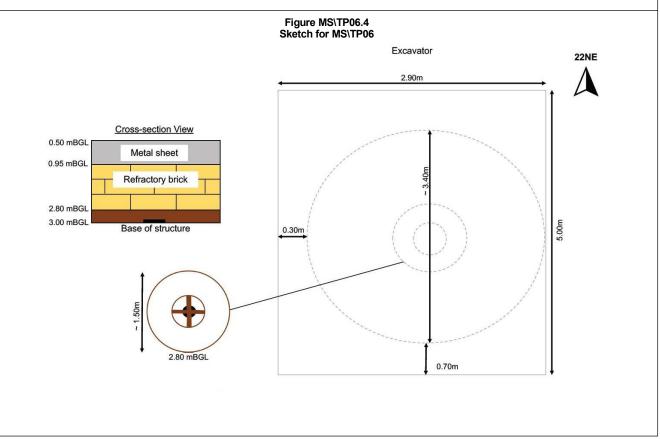
Method (Equipment):

3 of 3

Machine Excavated (Komatsu 210)

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\TP06 E:457098.335 N:525335.771 Ground Level (m): S 7.271 Start Date: 15/06/2021



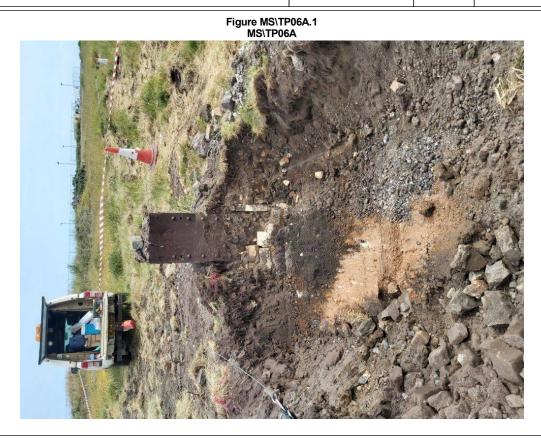


	Regional Office:	Unit 20 Business Development Centre	e, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 38 Tel: 01772 735 300 Fax: 01772 7	
		TR	IAL PIT RECORD		Status:- FINAL
Project:	Pre	liminary Onshore Ground	d Investigation for NZT		Exploratory Hole No.
Client:	AECOM		Location: North-west of Redcar, F:457100 653 N:5		MS\TP06A

					F:457100	).653 N:525332.17(	6				
Method (Equipment):  Machine Excav	ated (Kor	matsu 21	10)		Ground Le		Start Date: 18/06/2021	Sheet:	1 of 4		
SAMPLES & TESTS						STRATA		•			
Depth Type Test No Result	Water	Reduced Level	Legend	Depth (Thickness)	Description						
		6.62	$\bowtie$	MADE GROUND (Black brown grey very gravelly sand with high cobble content and frequent fragments of metal. Gravel is fine to coarse angular to subrounded and includes brick, concrete and clinker. Cobbles are angular to subangular and include concrete as slag. Boulders include cemented refractory brick. Slag is vesicular (50-75%)).  at c.0.70m BGL metal pipe. Surrounded by cobbles of metallic black rock with iridescent sheen. Possible solidified tar used to insulate pipe.  Terminated at 0.70m BGL - due to encountering pipe.							
PLAN ← 2.80			<b>→</b>		GROUNDWATER No groundwater inflow observed.						
Face A	n	مَ	2								
Orientation  216°  Eace C				STABI Pit side		stable throughout ex	cavation.		_		
ADDITIONAL INIC	RMATIC	)NI		GENE	RAI REMADI	(S					
ADDITIONAL INFORMATION  Sketch Diagram: Sketch Taken				(1) Exc	GENERAL REMARKS (1) Excavated to locate base of reinforced concrete block - terminated due to encountering pipe.						
Photographs: Yes		See add shee									
All dimensions in metres Scale 1:50.00		For exp abbrev	lanation iations s	of symbols and checked by: Logged by: Contract No. ee Key Sheets K.W. M. Bell 4339							

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#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457100.653 N:525332.176 | Ground Level (m): | Start Da | 18/06 Client: MS\TP06A **AECOM** Start Date: 18/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 4





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Project:

Client:

#### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457100.653 N:525332.176 | Ground Level (m): | Start Da | 18/06 MS\TP06A **AECOM** Start Date: 18/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 4

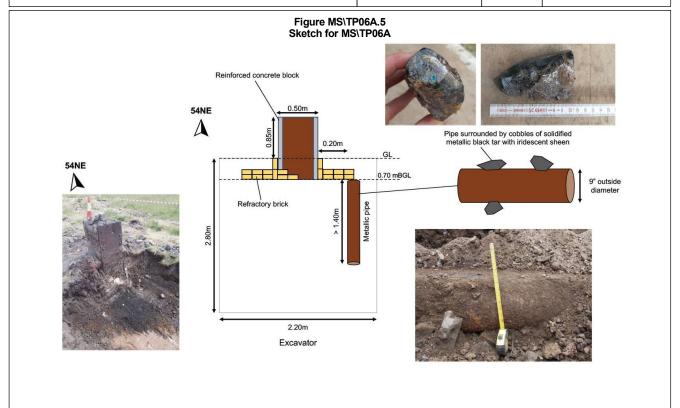




Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 909



#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\TP06A **AECOM** E:457100.653 N:525332.176 |Ground Level (m): | 7.321 Start Date: 18/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 4 of 4



Status:-

**FINAL** 

Exploratory Hole No.

♠	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 3 Tel: 01772 735 300 Fax: 01772						
		TRIAL PIT RECORD							
Project:	Pre	liminary Onshore Ground Investigation for NZT							

Client: Location: Location: Location: North Workshire									MS\TP07		
AECOM						North-west of Redcar, North Yorkshire E:457070.874 N:525239.023				IIIO(11 07	
Method (Equipment):  Machine Excavated (Komatsu 210)						•		Ground Level (m): 7.349	Start Date: 17/06/2021	Sheet: 1 of 5	
SAMPLES & TESTS				STRATA							
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description		
0.20 0.30 0.30 0.40 0.50 0.50 0.70 1.00 1.00 1.40 1.50 1.70 2.00 2.00 2.20 2.40 2.50 2.70 3.00 3.20 3.40 3.50 3.70 4.00 4.00 4.00	J1 ES2 PID B3 ES4 PID J5 ES6 PID J5 ES6 PID J7 ES10 LB11 PID J16 B17 PID J18 ES19 LB20 PID	<0.1ppm <0.1ppm <1.1ppm <0.1ppm <0.1ppm <0.1ppm <0.1ppm <0.1ppm <0.1ppm		5.35		(1.20) 1.20 (0.80) 2.00	and subb Cob Bot. (25-5) between ash between between ash between and cob subb and and glass between at c exc	low boulder content. Quangular and includes of angular and includes of ables are angular to sulfiders are subrounded includes at northwest corner of ween c.0.40-4.00m BG at northwest corner of ween c.0.60-1.20m BG ween c.0.60-1.20m BG ble content. Gravel is foudes slag, concrete, cli rounded and include slaween c.1.20-1.40m BG to corner. Layer of concent. 1.40m BGL metal slaween c.1.40m BGL metal slaween c.1.20-1.40m BG to corner. Layer of concent and low boulder congular and includes sinclude slag. Boulders say and vesicular (100% ween c.2.70-3.50m BG ween c.3.50-4.00m BG	GGL stepped concrete footing from Face C. GGL black grey.  brown orange very gravelly sand with high is fine to coarse angular to subrounded and clinker and brick. Cobbles are angular to slag and brick. Slag is vesicular (50-75%)).  GGL many whole yellow refractory bricks at increte in Face A. I sheet (2.10x0.30m).  Ge grey white slightly sandy gravel with high content. Gravel is fine to coarse angular to a slag. Cobbles are subangular to angular ers are subangular and include slag. Slag is (0%)).  GGL sand and gravel.  GGL gravelly sand.		
PLAN  4.50  Face A  Orientation  288°  288°  288°  B  Orientation  Face B						undwa	'ATER ater inflow observed.				
Fa		Face C		Č		STAB Pit side		base moderately stable	throughout excav	ration.	
	ΔΠΠΙΤ	IONAL INFORM	ΛΔΤΙ <u>Ω</u>	NI		GENE	RAI I	REMARKS			
ADDITIONAL INFORMATION  Sketch Diagram: Sketch Taken					GENE	ral I	CATANIA				
Photographs: Yes See additionsheets.											

For explanation of symbols and abbreviations see Key Sheets

Checked by:

Logged by: M. Bell

Contract No.

4339

All dimensions in metres Scale 1:50.00

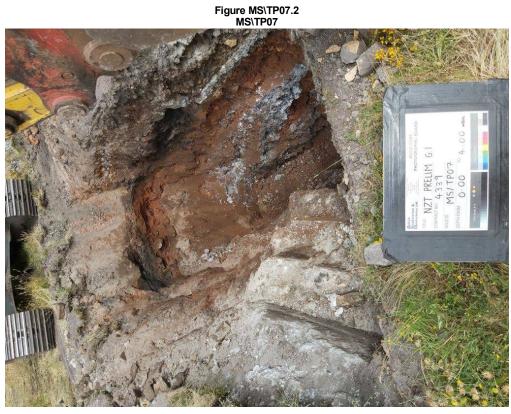
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Project:

Client:

#### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457070.874 N:525239.023 | Ground Level (m): | Start Da | 17/06 MS\TP07 **AECOM** Start Date: 17/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 2 of 5





**AECOM** 

Machine Excavated (Komatsu 210)

Project:

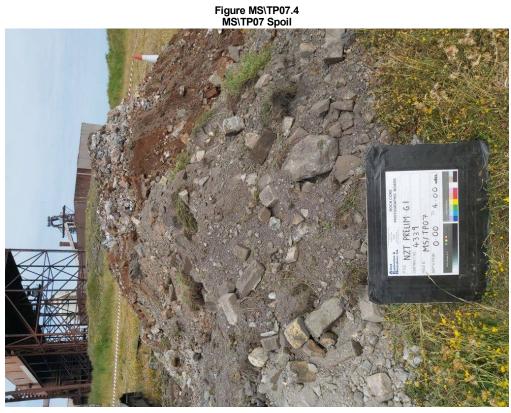
Client:

Method (Equipment):

3 of 5

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457070.874 N:525239.023 | Ground Level (m): | Start Da | 17/06 MS\TP07 Start Date: 17/06/2021





## ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Re

**AECOM** 

Machine Excavated (Komatsu 210)

Project:

Client:

Method (Equipment):

4 of 5

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457070.874 N:525239.023 | Ground Level (m): | Start Da | 17/06 MS\TP07 Start Date: 17/06/2021



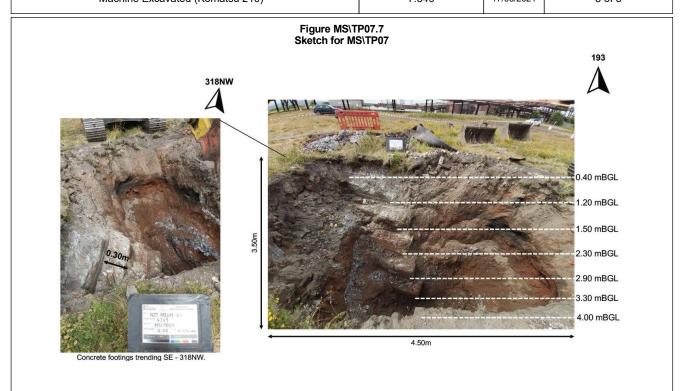


Project:

Client:

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

#### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire MS\TP07 **AECOM** E:457070.874 N:525239.023 | Ground Level (m): 7.349 Start Date: 17/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 5 of 5



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Œ	TRIA	FINAL	•		
Project:	Preliminary Onshore Ground	Exploratory Ho	ole No.		
Client:	AECOM	-west of Redcar, North Yor ::457016.816 N:525040.62	MS\TP0	3	
Method (Equipment):	Machine Excavated (Komatsu 210)	Ground Level (m): 7.430	Start Date: 16/06/2021	Sheet: 1 of 3	

D 20	3	Sheet:	Start Date: 16/06/2021	7.430	Ground Le		0)	natsu 21	ed (Kon	chine Excavate	ent): Mad	Method (Equipm
MADE GROUND (Grey very sandy gravel with high cobble an boulder content. Gravel is fine to coarse angular to subangular and include Boulders are subangular to subangular and include slag. Slavesicular (100%)).  MADE GROUND (Dark grey sandy gravel with high cobble cogravel is fine to coarse angular to subangular and includes slag limestone. Slag is vesicular (50-75%)).  By Display and D				STRATA						TESTS	PLES &	SAM
120			escription	De			Legend		Water		Type No	Depth
Image: Complete at 4.50m BGL   Single Sing	Boulders are subangular to subrounded and include slag. Slag is vesicular (100%)).  MADE GROUND (Dark grey sandy gravel with high cobble content.							6.53			ES2 PID B3 ES4 PID J5	0.30 0.30 0.40 0.50 0.50 0.70
1.00	slag and	lar and include	to subangul ·75%)).	obbles are angular lag is vesicular (50-	limestone. C limestone. S	-					LB7 PID J8 B9 PID J10	.00 .00 .20 .40 .50
Sacon   File   Sacon						(2.80) -(					PID J12 B13 PID	2.00 2.20 2.40 2.50
MADE GROUND (Grey brown slightly clayey very sandy grave low to medium cobble content. Gravel is fine to coarse angula subangular and includes slag. Slag is vesicular (100%)).    MADE GROUND (Grey brown slightly clayey very sandy grave low to medium cobble content. Gravel is fine to coarse angula subangular and includes slag. Slag is vesicular (100%)).    Autority of the coarse angula subangular and includes slag. Slag is vesicular (100%)).    Complete at 4.50m BGL.						-			<u>.</u>		ES15 PID J16 B17	3.00 3.00 3.20 3.40
PLAN  4.50  Face A  PLAN  GROUNDWATER Seepage at 3.68m and 3.70m BGL - slow inflow.	avel with	e to coarse an	Gravel is fine	ım cobble content. (	low to medic	(0.80)			<b>¥</b>		J18 ES19 LB20 PID	3.70 4.00 4.00 4.00
Face A  Seepage at 3.68m and 3.70m BGL - slow inflow.				4.50m BGL.	Complete at	- - - - - - -				<0.1ppm	B22	.40
Orientation T			nflow.	d 3.70m BGL - slow ii			• •			4.50		
								асе D				
Pit sides and base moderately stable throughout excavation.		ation.	ghout excava	derately stable throu			₩ ₩			IĽ		
ADDITIONAL INFORMATION GENERAL REMARKS				(S	RAI REMARI	GENE		ADDITIONAL INFORMATION				
Sketch Diagram: No Sketch Taken					<b></b>							
Photographs: Yes See additional sheets.										Yes	hs:	Photograp
All difficultions in flictions   I of explanation of symbols and   I is a part of the symbols and	ract No. <b>1339</b>			Checked by:	ols and heets	of symbo	anation ations s	For expl				

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**AECOM** 

Project:

Client:

Method (Equipment):

### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457016.816 N:525040.622 | Ground Level (m): | Start Da | 16/06 MS\TP09 Start Date: 16/06/2021

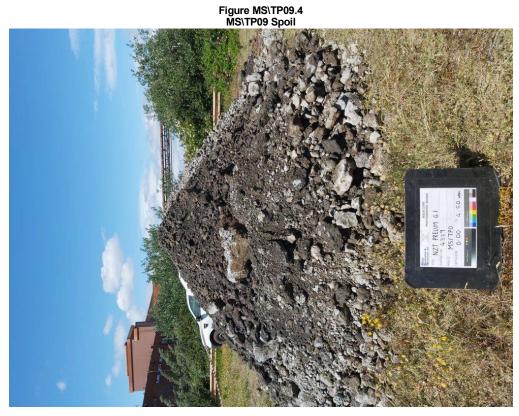




# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Re

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457016.816 N:525040.622 | Ground Level (m): | Start Da | 16/06 Client: MS\TP09 **AECOM** Start Date: 16/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3





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

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G	TRI	FI	NAL		
Project:	Preliminary Onshore Ground	Explorate	ory Hole No.		
Client:	AECOM	-west of Redcar, North Yo E:457128.459 N:524892.4		MS	\TP10
Method (Equipment):	Machine Excavated (Komatsu 210)	Ground Level (m):	Start Date: 21/06/2021	Sheet:	of 3

Machine Exc	avated (Ko	matsu 21	0)			8.134	21/06/2021		1 of 3
SAMPLES & TESTS					•	STRATA	•	•	
Depth Type Test No Resul		Reduced Level	Legend	Depth (Thickness)		D	escription		
0.20 J1 0.30 ES2 0.30 PID 0.40 LB3 0.50 ES4 0.50 LB5 0.50 PID <-0.1pp		7.98 7.63 7.53		ma 0.50 0.60 low to o bric at at a	ny rootlet DE GRO cobble conserved coarse and conserved co.0.20m E co.0.40m E bble with in DE GRO ulder controlled ludes coken ludes coken de include co.0.55-0.6 co.0.60m E	UND (Grass over s).  UND (Soft brown sontent and occasing gular to rounded and rete. Cobbles are given in the soft of the soft	slightly sandy onal fragmen and includes are angular and pravel vectored.  and gravel vectored and gravel vectored are angular and gravel vectored are sured concrete and (concrete but on the same are angular are sured concrete but one on the same are angular are sured concrete but one one on the same are angular are sured concrete but one	slightly g ts of plast sandstone d include h plasticity vith high c gular to su gular to subar to subar bangular is reinford pase).	ravelly clay with ic. Gravel is fine and ic., mudstone, brick).  Metallic cobble and low ubangular and ico subrounded iced.
PLA  2.30 Face	) A		<b>^</b>	GROUNDN No groundw		v observed.			
Orienta 227  Face	••	Tace B	4.30	STABILITY Pit sides an		ble throughout exca	avation.		
ADDITIONAL IN	FORMATIO	NC		GENERAL REMARKS					
Sketch Diagram:	ketch Diagram: No Sketch Taken								
Photographs: Yes	es See additional sheets.								
All dimensions in metres Scale 1:50.00						Checked by: <i>K.W.</i>	Logged M. Be		Contract No. 4339

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Project:

Client:

Method (Equipment):

#### TRIAL PIT RECORD **FINAL** Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT | Location: | North-west of Redcar, North Yorkshire | E:457128.459 N:524892.473 | Ground Level (m): | Start Da | 21/06 MS\TP10 **AECOM** Start Date: 21/06/2021 Machine Excavated (Komatsu 210) 2 of 3





# ALLIED EXPLORATION & GEOTECHNICS LIMITED Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Tel: 0191 387 4700 Fax: 0191 387 4710 Tel: 01772 735 300 Fax: 01772 735 999

#### TRIAL PIT RECORD **FINAL** Project: Exploratory Hole No. Preliminary Onshore Ground Investigation for NZT North-west of Redcar, North Yorkshire Client: MS\TP10 **AECOM** E:457128.459 N:524892.473 | Ground Level (m): | S | Start Date: 21/06/2021 Method (Equipment): Machine Excavated (Komatsu 210) 3 of 3



**Inspection Pit Records** 



Ġ				II	NSPE	CTION	N PI	T RECORD		Status:- FINAL
Project:			Exploratory Hole No							
Client:	ent: AECOM							west of Redcar, Nort :457527.734 N:5258		LF\CPT01
Method (Equipm	thod (Equipment): Hand Excavated (Hand Tools)					<b>'</b>		Ground Level (m): 4.676	Start Date: 24/05/2021	Sheet: 1 of 1
SAN	SAMPLES & TESTS						•	STRAT	-A	•
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description	
				4.48	×	0.20	Brow		y SAND with mar	ny rootlets. Sand is fine to
0.30 0.30 0.50 0.70 0.70 0.80-0.90	ES1 PID J2 ES4 PID B3	<0.1ppm		3.48		  (1.00)      1.20	\	vn yellow SAND. San	d is fine to mediu	m.
1.00	J5 PID	<0.1ppm					Com	plete at 1.20m BGL.		

	PLAN		GROUNDWATER
<u> </u>	0.50 Face A	<b>─</b>	No groundwater inflow observed.
e D	Orientation	0.50 Face B	
Face		8 B	STABILITY Pit sides and base moderately unstable throughout excavation.
	Face C	]	

ADD	ITIONAL INFOR	MATION	GENERAL REMARK			
Sketch Diagram:	No S	Sketch Taken	(1) Excavated prior to	CPT Testing.		
Photographs:	No	See additional sheets.				
All dimensions	All dimensions in metres For explanation or			Checked by:	Logged by:	Contract No.

Scale 1:50.00 Scale 1:50.00 Solution of symbols and abbreviations see Key Sheets D. Portsmouth 4339

Status:-

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 38 Tel: 01772 735 300 Fax: 01772 7
		INSPECTION PIT RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	
Client:		Location:	

AECOM

Method (Equipment):

**FINAL** Exploratory Hole No. | Location: | North-west of Redcar, North Yorkshire | E:457528.447 N:525852.477 | Ground Level (m): | Start Da | 4 705 | 25/05 LF\CPT01A Start Date:

metriod (Equip		Hand Excavated	l (Han	d Tools)				4.705	25/05/2021	Oneet.	1 of 1	
SA	MPLES &	TESTS						STRATA	•	•		
Depth	Type No	Test Result	Water	Water	Reduced Level	Legend	Depth (Thickness)		Γ	Description		
				4.51	×	0.20	Brov	vn slightly organic silty SA ium.	ND with man	y rootlets	. Sand is fine to	
								vn yellow SAND. Sand is f	ine to mediur	n.	/	
						(1.30)						
						· <u> </u>						
				3.21		1.50	0	onlete et 4 50m BCI				
							Con	plete at 1.50m BGL.				
						[-						
		PLAN				GROUN No grou	NDW ndwa	ATER ter inflow observed.				
<b>←</b>		0.50 Face A			<b>†</b>	J. 34.						
Face D		Orientation 000°		- 0.50 Face B								
Fac				Ū		STABIL Pit sides	ITY and	base moderately unstable the	hroughout exc	avation.		

	PLAN		GROUNDWATER
	0.50 Face A		No groundwater inflow observed.
Face D	Orientation 000° →	0.50 —— Face B	STABILITY Pit sides and base moderately unstable throughout excavation.
	Face C	]↓	

- 1									
	ADD	ITIONAL INFOR	MATION	GENERAL REMARK					
	Sketch Diagram:	m: No Sketch Taken		<ul><li>(1) Excavated prior to CPT Testing.</li><li>(2) No samples were required.</li></ul>					
	Photographs:	No	See additional sheets.						
ĺ	All dimensions	in metres	For explanation of	of symbols and	Checked by:	Logged by:	Contract No.		

For explanation of symbols and abbreviations see Key Sheets K.W. D. Portsmouth 4339 Scale 1:50.00

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 Tel: 01772 735 300 Fax: 01772 735 999

	<b>A</b>
E	=
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ſ.	2

INSPECTION PIT RECORD	Status:-	FINAL	

Project:		Prelim	ninary (	Onshore	e Ground	d Investiç	ation	for NZT		Ехр	loratory Hole No.
Client:	: Location: North-west of Redcar, North Yorkshire E:457548.396 N:525875.571							=	LF\CPT02		
					·		Ground Level (m): 3.712	Start Date: 25/05/2021	Sheet:	1 of 1	
SAM	PLES &	TESTS						STRATA			
			1						-		

SAMPLES & TESTS			STRATA					
Depth Type Test No Result	Water	Reduced Level			Description			
0.30	YM .	3.51		0.20	MADE GROUND (Brown slightly organic silty sand with many rootlets. Sand is fine to medium).  MADE GROUND (Brown yellow sand. Sand is fine to medium).  MADE GROUND (Grey gravel with medium cobble content. Gravel is fine to coarse subangular and includes slag. Cobbles are subangular and include slag. Slag is vesicular (100%)).  Terminated at 1.00m BGL - due to difficult digging.			
PLAN		1	ı		NDWATER			

	PLAN	
	0.50 Face A	
Face D	Orientation	0.50 ——Face B
	Face C	↓

GROUNDWATER No groundwater inflow observed.

STABILITY
Pit sides and base moderately unstable throughout excavation.

ADD	ITIONAL INFOR	MATION	GENERAL REMARK			
Sketch Diagram:	No S	Sketch Taken	(1) Excavated prior to	CPT Testing.		
Photographs:	No	See additional sheets.				
All dimensions in metres Scale 1:50.00  For explanation of abbreviations see				Checked by: K, W.	Logged by: D. Portsmouth	Contract No. <b>4339</b>

Status:-

A	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 387 Tel: 01772 735 300 Fax: 01772 73
		INSPECTION PIT RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

**FINAL** Exploratory Hole No. Location:
North-west of Redcar, North Yorkshire LF\CPT02A E:457549.703 N:525875.634
| Ground Level (m): | S | 3.747 Start Date: 25/05/2021 1 of 1

SAMPLES & TESTS  Depth Type Test Result					STRATA
		Reduced Level	Legend	Depth (Thickness)	Description
		3.55		0.20	MADE GROUND (Brown slightly silty organic sand with many rootlets. Sand is fine to medium).
				(0.60)	MADE GROUND (Brown yellow sand. Sand is fine to medium).
		2.95 2.85		0.80 0.90	MADE GROUND (Grey gravel with medium cobble content. Gravel is
				<u> </u>	\fine to coarse subangular and includes slag. Cobbles are subangular \and include slag. Slag is vesicular (100%)).
				[	Terminated at 0.90m BGL - due to difficult digging.
				-	
				-	
				-	
				-	
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				<u> </u>	
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				-  -  -	
				-	
				-	
				<u> </u>	
				<u>-</u>	
PLAN	•	•			NDWATER undwater inflow observed.
← 0.50 Face A			<b>→</b>	No gio	diamater fillow observed.

	PLAN	
•	0.50	
	Face A	1
Face D	Orientation 000° →	0.50 Face B
	Face C	

Client:

Method (Equipment):

**AECOM** 

Hand Excavated (Hand Tools)

STABILITY
Pit sides and base moderately unstable throughout excavation.

Contract No.

4339

ADD	ITIONAL INFOR	MATION	GENERAL REMARI		
Sketch Diagram:	No S	Sketch Taken	(1) Excavated prior to	CPT Testing.	
Photographs:	No	See additional sheets.			
All dimensions in metres For explanation o Scale 1:50.00 abbreviations se				Checked by: K.W.	Logged by: D. Portsmouth

A	ALLIED EXPLORATION & GEOTECHNICS LIMIT  Head Office: Regional Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL  Tel: 0191 387 4700 Fax: 0191 387 4 Tel: 01772 735 300 Fax: 01772 73										
		Status:- FINAL									
Project:	Preliminary Onshore Ground Investigation for NZT										
Client:	AECOM  Location: North-west of Redcar, North Yorkshire E:457762.771 N:525932.348								LF\CPT03		
Method (Equipme		Hand Excavated	l (Hand	d Tools)	1			Ground Level (m): 3.840	Start Date: 26/05/2021	Sheet: 1 of 1	
SAM	IPLES &	TESTS						STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		I	Description		
0.50					- - - - - - - - - - - - - - - - - - -	Yell	ow SAND. Sand is fine to	medium.			
0.80 0.80 1.20	ES2 PID B3	<0.1ppm		2.34							

				2.34		1.50				
1.50	J4					-	Complete at	1.50m BGL.		
						-				
						-				
						-				
						-				
						-				
						-				
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		PLAN				GROU	NDWATER			
						No gro	undwater inflov	v observed.		
		0.50 Face A			ĺ↑					
				_						
Face D		Orientation 000°		-ac	0.50					
Fac		<del></del>		ū	jö	STABI	LITY			
						Pit side	s and base un	stable throughout exc	avation.	
		Face C								
		race C			_  ↓					
						] ][ <u>==</u> :-=	<b></b>	<u> </u>		
	ADDI1	TIONAL INFORM	VIA FIOI	N		GENE	RAL REMARI avated prior to	S CPT Testing		
						(',' = xc	prior to	C 100mig.		
Sketch Diagr	ram:	No S	ketch Ta	aken						
						<b>∐</b>				
Photograph	ns:	No		See add shee	ıtıonal ts.					
All dimen	All dimensions in metres Scale 1:50.00  For explanation abbreviations s				of symbo	ls and	Checked by:	Logged by:	Contract No.	
Sca	ile 1:50.	00	'	abbrev	iations s	ee Key S	heets	Checked by:	Logged by: D. Portsmouth	4339
							l .			

Status:-

▲	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 0191 Tel: 01772 735 300 Fax: 0177
E G		INSPECTION PIT RECORD	
Project:	Pre	eliminary Onshore Ground Investigation for NZT	
Client:		Location:	

Method (Equipment):

INSPEC	CTION PI	T RECORD		FINAL			
Preliminary Onshore Ground	Exploratory Hole No.						
AECOM	AECOM Location: North-west of Redcar, North Yorkshire E:457834.825 N:525934.533						
Hand Excavated (Hand Tools)		Ground Level (m): 2.123	Start Date: 26/05/2021	Sheet: 1 of 1			

SAMPLES & TESTS    Depth   Took   Test   Result   Seduced   Legend   Depth   Chickness   Description	CAM	DI EC 9	TECTO					STRATA
0.30	ONIVII ELO & ILO IO							SIRAIA
0.30	Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
PLAN  GROUNDWATER  No groundwater inflow observed	0.30 0.30 0.50		Wa			(0.70)	Yellow SAND. Sand is fine to medium.  Terminated at 0.70m BGL - due to instability caused by water	
		PLAN						NDWATER

	PLAN	
	0.50	
	Face A	
Face D	Orientation 000°	- 0.50 — Face B
	Face C	

STABILITY
Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
(1) Excavated prior to CPT Testing.

Checked by: Logged by: D. Portsmouth Contract No. For explanation of symbols and abbreviations see Key Sheets All dimensions in metres 4339 Scale 1:50.00

Status:-

**FINAL** 

lack	Head Office: Regional Office:	Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL	Tel: 0191 387 4700 Fax: 019 Tel: 01772 735 300 Fax: 017
		INSPECTION PIT RECORD	
Project:	Pre	liminary Onshore Ground Investigation for NZT	

Client:

Exploratory Hole No. North-west of Redcar, North Yorkshire LF\CPT05 **AECOM** Start Date: 27/05/2021 Method (Equipment): Hand Excavated (Hand Tools) 1 of 1

	<u>'</u>	ianu Excavateu (	Tiana	10013)			0.424	21/03/2021	1 01 1			
SAM	IPLES &	TESTS					STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Depth (Thickness)					
				0.22	· · · · · ·	0.20	Yellow brown SAND. Sand is f	ine to mediun	n.			
				0.22		- 0.20	Terminated at 0.20m BGL - due					
							ingress.					
						-						
						_						
						-						
						-						
						-						
						-						
						-						
						_						
						-						
						-						
						-						
						_						
						-						
						-						
						-						
						-						
						-						
		PLAN				GROU	NDWATER					
-		0.50	_		•	No gro	undwater inflow observed.					
		Face A			1							
		Orientation		T a								
Face D		000°		9	0.50	STABI	LITY					
				u.	1	Pit side	s and base unstable throughout ex	cavation.				
	50											
	Face C											
ADDITIONAL INFORMATION						GENE	RAL REMARKS					
				(1) Exc	avated prior to CPT Testing.							
Sketch Diagram: No Sketch Taken												
	-					_						
Photograp	hs:	No	S	ee addi sheet								
					⅃ҍ							

For explanation of symbols and abbreviations see Key Sheets

Checked by:

Logged by: D. Portsmouth

Contract No.

4339

All dimensions in metres Scale 1:50.00

A		Head Office: Regional Office:	Jnit 25 St Jnit 20 Bu	ella Gill Indust usiness Develo	rial Estate, Pe	elton Fell, Ches e, Eanam Whar	ter-le-Str f, Blackb	eet, Co. Durham, DH2 2RG Tel: ( Tel: (	0191 387 4700 <b>Fax:</b> 0191 38 01772 735 300 <b>Fax:</b> 01772 7	37 4710 735 999
				II	NSPE	CTIO	N PI	T RECORD		Status:- FINAL
Project:		Prelin	ninary	Onshore	e Ground	d Investig	ation	for NZT		Exploratory Hole No.
Client:		AECOM				Location	North	-west of Redcar, North E:458001.597 N:52604		LF\CPT06
Method (Equipme	ent):	Hand Excavated	l (Han	ıd Tools)				Ground Level (m): 0.786	Start Date: 28/05/2021	Sheet: 1 of 1
SAM	PLES 8	TESTS				Γ		STRAT	A	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)			Description	
				0.49		0.30		ow brown SAND. San	d is fine to mediu	ım.
		PLAN				GROU	ingr	/ATER		
		0.50 Face A			<b>,</b> □↑	No gro	undwa	ater inflow observed.		
		i ace A								
Face D		Orientation 000°		race	0.50	STABI	LITV			
		Face C		<u></u>		Pit side	es and	base unstable througho	out excavation.	
	ADDI <sup>*</sup>	TIONAL INFORM	/ATIC	N				REMARKS d prior to CPT Testing.		
Sketch Diag	ram:	No S	ketch 1	Taken		(1) EXC	aval <del>e</del>	a piloi lo OFT Testing.		

Print Date and Time: 29/11/2021 14:35:01

All dimensions in metres Scale 1:50.00

Photographs:

No

See additional sheets.

For explanation of symbols and abbreviations see Key Sheets

Checked by:

Logged by: D. Portsmouth Contract No. 4339

**Groundwater Observations Made at the Time of Site Works** 



Head office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-te-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
(WATER STRIKES)

Remarks			flow (saturated strata).	flow.	flow.	/ (saturated strata).				AEG Contract No :- 4339	Certificate No. :- GWOWS/4339/1
	Groundwater seepage - slow inflow.	Groundwater seepage - slow inflow.	Groundwater seepage - Moderate inflow (saturated strata).	Groundwater seepage - moderate inflow.	Groundwater seepage - moderate inflow.	Groundwater seepage - heavy inflow (saturated strata).	Groundwater seepage - slow inflow.	Groundwater seepage - slow inflow.		AECOM	3
Depth After 20 mins											Approved By :-
Depth After 15 mins									,	Client :-	
Depth After 10 mins										0	2
Depth After 5 mins											Checked By :-
Total Time (mins)										or NZT	O
Final Depth (m)										Preliminary Onshore Ground Investigation for NZT	1 of 1
Depth Sealed (m)										Ground Inv	
Depth of Casing (m)										ary Onshore	r Sage No
Depth of Water (m)	4.47	4.50	2.35	4.20	4.30	3.00	3.68	3.70		Prelimin	7:
Date	16/06/2021	16/06/2021	14/06/2021	17/06/2021	17/06/2021	22/06/2021	16/06/2021	16/06/2021		Title :-	sue :- 07/10/2021
Exploratory Hole No.	MS\TP01	MS\TP01	MS\TP03	MS\TP05	MS\TP05	MS\TP06	MS\TP09	MS/TP09		Contract Title :-	Date of Issue :-

**Groundwater Monitoring Results** 

